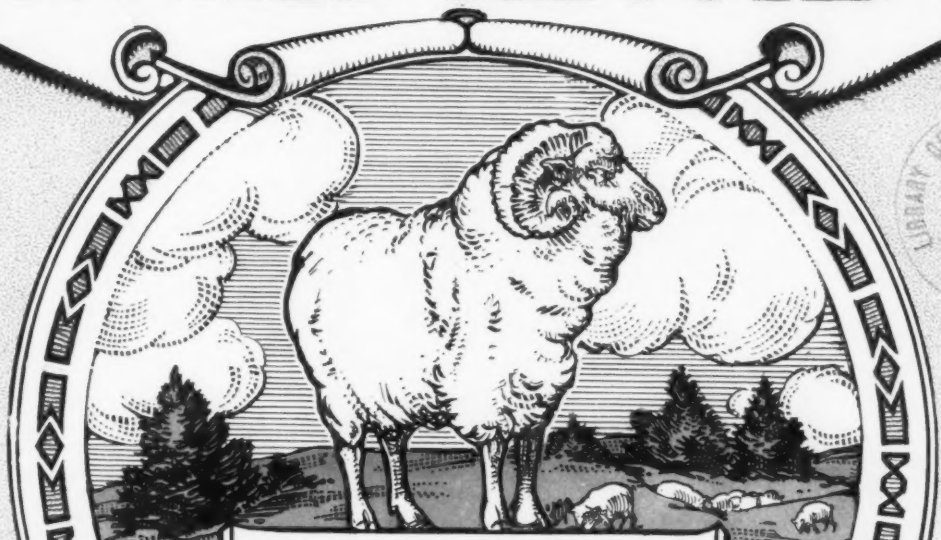
ıme XLI MAY 12 1911
or 2

MAY, 1911

$2.00 per year
$3.00 with Directory

# TEXTILE WORLD RECORD



## Special Features

Programmes
of the
Coming Conventions

Mill Experiences

Organized Short Time

Artficial Tulle

Full Fashioned Knitting

LORD & NAGLE COMPANY BOSTON, MASS.

ble of Contents Page 61 Buyers Index Page 163 Index to Advertisements Page 173

# Mercerizing Machinery for Piece Goods

—— AND ——

## Yarns in the Warp or Chain

**All Kinds of Outfits for Bleaching Thread and Soft Twisted Yarns.**
**Bleaching Machinery for Yarns in the Warp or Chain.**

# BLEACHING
# DYEING
# DRYING
## AND
# FINISHING
# MACHINERY

Singeing Machines, Boiling Kiers, Washers Water, Chemic and Sour Squeezers.

Rusden Patent, Continuous Chainless Steamer, Aniline Agers.

Dyeing Machines, Open Soapers, Blanket Washers, Color Kettles, Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders.

Water and Starch Mangles, Automatic Tentering Machines, Dyeing Machines for Chain Warps.

Dampening Machines ,Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, etc.

Combination Rolls made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

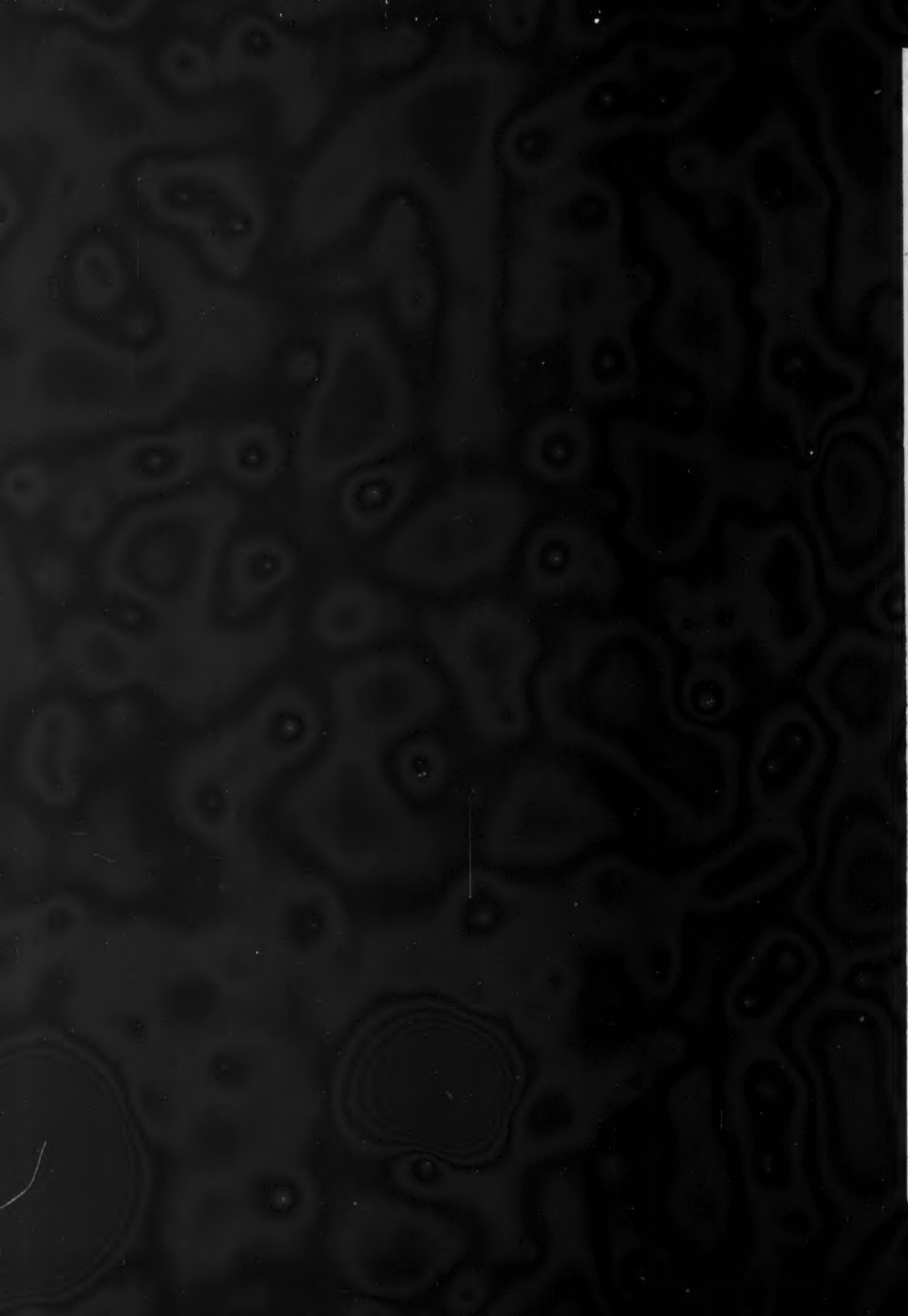
Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-Deposited Copper Rolls for all purposes.

Padding and Drying Machines for Shade Cloths, Single and Double Cylinder Engines, Hydraulic Presses and Pumps.

Estimates, Drawings and full particulars of complete plants furnished on application

## THE TEXTILE-FINISHING MACHINERY CO.

**Howard Building, Providence, R. I.**



# Table of Contents for May.


PAGE

Monthly Comment . . . . . 63
Meeting of the American Woolen and Worsted Manufacturers' Association.. 69
The Richmond Meeting of the American Cotton Manufacturers . . . . . 69
National Association of Hosiery and Underwear Manufacturers. . . . . 70
The Testimonial Dinner to William Whitman . . . . . 73
Mill Experiences . . . . . 76
The Practical Use of Concrete Construction for Textile Mills . . . . . 80
Crossed Warp Effects . . . . . 83

CORRESPONDENCE AND NOTES . . . . . 85
Artificial Tulle—Mitcheline and Satin Quilts—A Trial Balance for a Textile Mill—Mill Organization—Tying Wool with Paper Twine—An Improved Shuttle—Washing and Drying Worsted Tops—English Notes—Efficiency or Scientific Management—Artificial Horsehair.

QUESTIONS AND ANSWERS . . . . . 103

KNITTING DEPARTMENT . . . . . 111
The Knit Goods Situation—Full Fashioned Knitting—Our Trade with Chemnitz—Mercerizing Fashioned Knit Goods on Forms—A Circular Knitting Machine—Knitting Mill News.

DYEING, BLEACHING, PRINTING, ETC. . . . . 122
To determine whether Cotton has Been Dyed with a Developed Black—Tests for Woolen Khaki—Cloth Finishing—The Valuation of Dyers' Materials—Dye Recipes.

NEW MACHINERY AND PROCESSES. . . . . 132
PERSONALS . . . . . 143
MILL NEWS . . . . . 147
NEW PUBLICATIONS . . . . . 154
BUSINESS LITERATURE . . . . . 154
INDUSTRIAL NOTES. . . . . 155
TEXTILE PATENTS AND TRADEMARKS . . . . . 160
WOOL MARKET . . . . . 195
BRADFORD MARKET . . . . . 197
COTTON MARKET . . . . . 199
YARN MARKET . . . . . 201
RAG AND SHODDY MARKET. . . . . 208
SILK MARKET. . . . . 211
DYESTUFFS AND CHEMICALS . . . . . 215
MILL STOCKS . . . . . 219


## Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

# IMPROVED NEW PATTERN DRAWING FRAMES

WITH ELECTRIC OR MECHANICAL STOP MOTIONS

HOPPER BALE OPENERS
IMPROVED PICKING MACHINERY
Cotton Conveying and Delivery Systems
REVOLVING FLAT CARDS
SLUBBING, INTERMEDIATE, ROVING and JACK FRAMES
NEW PATTERN SPINNING FRAMES
IMPROVED TWISTERS
Cone Winders—Warpers—Slashers

SEND FOR OUR DESCRIPTIVE CATALOGUE

HOWARD & BULLOUGH
AMERICAN MACHINE CO., LTD.
PAWTUCKET, R. I.

WE INVITE INVESTIGATION AND COMPARISON

CB243957


# TEXTILE WORLD RECORD

COMBINING

**The Textile World and Textile Record.**

VOL. 41 (NEW SERIES.) May, 1911 No. 2


# *Monthly Comment.*

### A "Pure Textile" Law.

As a curiosity and also as a warning to the textile trade we give the text of the following "pure textile" bill, recently introduced in the Illinois Senate:

Section 1. Be it enacted by the people of the State of Illinois, (2) represented in the General Assembly: That it shall be unlawful for any person (3) to sell, offer for sale, expose for sale or advertise for sale, any article of clothing (4) or any handkerchiefs, towels, or bed linen or blankets or any of the fabrics from (5) which the heretofore mentioned articles are made as wholly composed of wool (6) cotton, or any other textile fiber which contains a mixture of any other material (7) of an inferior kind or quality such as shoddy, hemp, jute, or any other fiber (8) not of the same kind or quality as that of which such garment or fabrics (9) appears to be or is advertised or represented to be composed.

Section 2. All articles of clothing, handkerchiefs, towels, bed linen or (2) blankets and the woven fabric from which such articles are made, when manufactured (3) or sold within the State of Illinois and not wholly composed of one material (4) shall have plainly marked thereon or on the package in which they are (5) contained or on a placard attached to such article when removed from such package (6) over the name of the manufacturer the materials which compose the same (7) and the proportion of each material entering into the manufacture thereof.

Section 3. Whoever shall sell, keep or advertise for sale any such clothing (2) or fabric in violation of the provisions of this act, shall be guilty of a (3) misdemeanor and shall be punished by a fine of not less than $200 (4) nor exceeding $500 for each offense.

The public is not informed regarding such bills as this, and concludes that the proposed legislation is desirable because, as a Chicago clothier puts it, "the consumer has as much right to know what he is buying to wear as he has to know what he is buying to eat." We have repeatedly pointed out the limitations of such legislation, and it might prove to be a good thing to have such a law placed on the statute book of one of the States. The attempt to enforce it would enlighten the entire country.

### Preliminary Reports of the Census.

Last month the Bureau of the Census began issuing preliminary reports of the census of textile manufacturing, and in our April issue we gave an abstract of the first of these reports dealing with wool and wool goods. Parts of these statistical exhibits were somewhat mystifying to us, but before commenting on them we took the precaution to ask the Director of the Census whether they included the entire product of the industry. Below we give correspondence, which discloses the fact that the preliminary reports are not complete. The Director would doubtless find it a good plan to state this fact in connection with any other preliminary reports he may issue:

Boston, Mass., April 5, 1911.

Mr. E. Dana Durand, Director of the Census, Washington, D. C.

Dear Sir: Referring to your preliminary report on woolen and worsted goods dated April 4th, I would like to know whether the amount of cotton yarn given in this report includes the yarn used in the manufacture of cotton fabrics for men's wear. There are, as you undoubtedly know, a number of mills that make the so called "cotton

worsteds" which contain varying proportions of worsted yarn. These same mills make large quantities of goods that have no worsted in them and which are manufactured concurrently with worsted and cotton mixed goods. I would also like to know whether such cotton fabrics were included in the 1899 census?

Thanking you in anticipation for a reply, I am,

Yours very truly,

Samuel S. Dale,
Editor.

. .

Washington, April 11, 1911.

Mr. Samuel S. Dale, Editor Textile World Record, Boston, Mass.

Dear Sir: Referring to your letter of the 5th instant, relative to the preliminary report on woolen and worsted goods, I have to advise that manufacturers' reports are classified according to the predominating products. Inasmuch as some of these cotton worsteds are made in woolen mills and some in cotton mills, only a portion of the cotton yarn used in the manufacture of this product is given in the preliminary report. The same method was followed in the classification of schedules in 1899 and the figures shown in the preliminary statement are comparative.

Trusting that this will be satisfactory, I am,

Very respectfully,

E. Dana Durand,
Director.

## The Invisible Supply of Cotton.

The Internation Cotton Federation issued last month its semi-annual report of raw cotton at the mills on March 1, 1911. The following table gives the figures for this and previous reports issued by the Federation:

STOCKS AT FOREIGN MILLS.

| Date. | Total Spindle. | Bales on hand. | Bales used per week. | Stocks will last |
|---|---|---|---|---|
| Aug. 31, '05 | 46,726,929 | 935,237 | 103,269 | 9 weeks |
| Mar. 1, '06 | 54,297,537 | 1,237,180 | | |
| Aug. 31, '06 | 66,072,303 | 1,210,610 | 145,603 | 8.3 weeks |
| Mar. 1, '07 | 71,054,503 | 1,911,071 | | |
| Aug. 31, '07 | 74,279,078 | 2,368,410 | 190,811 | 12.4 weeks |
| Mar. 1, '08 | 78,984,106 | 2,342,127 | | |
| Aug. 31, '08 | 83,371,883 | 2.132,045 | 215,472 | 9.9 weeks |
| Mar. 1, '09 | 85,906,697 | 2,425,127 | | |
| Aug. 31, '09 | 88,188,004 | 2,275,392 | 222,740 | 10.2 weeks |
| Mar. 1, '10 | 91,154,411 | 2,492,688 | | |
| Aug. 31, '10 | 91,124,025 | 2,005,786 | 236,990 | 8.4 weeks |
| Mar. 1, '11 | 93,726,091 | 2,641,688 | | |

STOCKS AT AMERICAN MILLS.

| Date. | Total Spindle. | Bales on hand. | Bales used per week. | Stocks will last |
|---|---|---|---|---|
| Aug. 31, '05 | 23,687,495 | 776,801 | 82,288 | 9.4 weeks |
| Aug. 31, '06 | 25,250,096 | 688,312 | 94,413 | 7.3 weeks |
| Aug. 31, '07 | 26,242,000 | 996,000 | 95,904 | 10.4 weeks |
| Mar. 1, '08 est. | 27,000,000 | 1,089,119 | | |
| Aug. 31, '08 | 27.846,000 | 596,000 | 87,981 | 6-4 weeks |
| Mar. 1, '09 | 27,846.000 | 1,831,800 | | |
| Aug. 31, '09 | 27,783,000 | 908,000 | 97,788 | 9.3 weeks |
| Mar. 1, '10 | 28,000,000 | 1,674,000 | | |
| Aug. 31, '10 | 28,349,000 | 518,000 | 90,519 | 5.7 weeks |
| Mar. 1, '11 | 28,500,000 | 1,525,000 | | |

The report for March 1, 1911, includes returns from 122,226,091 spindles out of a total of 135,596,724 spindles in all countries.

## Stripping Hemp by Machine in the Philippines.

We published in the March issue an article from the Manila Times describing the McLane hemp stripping machine, which has been introduced into the Philippines. Desirous of knowing more about this machine we wrote to one of our friends in Manila and received a reply which gave so many interesting particulars regarding the hemp industry in the Philippines that we give the following extract here:

I have your letter of Feb. 18th, relative to the McLane hemp machine. Other hemp cleaning machines that have been devised and introduced here are the Kaiser, the Behrendt, Clarke and one other. These machines all do good work, that is, they turn out a clean fiber of high grade that commands a maximum price, but in every case there seems to be some serious drawback. It is claimed that they cost too much to operate or are so heavy that it is impracticable to move them from place to place. They consume so much hemp that what is grown in the vicinity of any location selected quickly becomes exhausted and the proposition of transporting the stalks from any considerable distance to the machine brings up serious obstacles that have thus far tended to limit the use of the machines, even though they appear to be entirely efficacious in their work.

Then there is the extremely difficult problem of the native grower to contend with. Innovations are always frowned upon by the average Filipino and even though you were to offer to strip his hemp at your own risk and guarantee him better results than he is used to getting, it is doubtful if an arrangement could be effected with more than one out of twenty. The methods under which they have operated with regard to the marketing of the product offers still further difficulties. The average hemp planter secures advances from Chinese merchants under a contract which compels him to sell his hemp to the Chinamen. Of course current market rates are to be paid, but the planter has no means of securing any sort of standard grading for the hemp, and the result is that the Chinaman gets it all on the basis of the price of the lowest market grade. I am trying to get the government to do something towards protecting the grower that will at the same time give him an incentive to produce better hemp. Investigations made by the fiber expert of the Bureau of Agriculture has developed the fact that the loss in weight caused by clean stripping is not more than about fifteen or twenty per cnt., while the value of the fiber thus produced is at least double, so the loss entailed by present methods is enormous.

### Does Cotton Carry Disease Germs.

An outbreak of small pox occurred some weeks ago among cotton mill operatives in Bury, Wigan and Stalybridge, England, and the evidence points to infected cotton as the cause. The first case was a girl who worked in the preparation department of a Bury spinning mill, and of the other seven persons affected the five were employed in the preparatory department in various mills. The victims at Wigan and Stalybridge were also cotton operatives, and naturally the cotton they were handling fell under suspicion. The cotton included both Egyptian and American, and owing to the prevalence of small-pox in Egypt, the opinion prevailed at first that the disease had been brought to Lancashire in cotton shipped from Egypt. Later it was found that several of those infected had been working in contact with American cotton only. The only means suggested for combatting the disease are vaccination, particularly of children, and isolation of those attacked. In this connection the statement by Dr. Corbin of Stockport is of interest, he having made a special study of small-pox.

The probability of accidental infection of small-pox arising from imported raw cotton is very small under ordinary circumstances, as the coincidence of a number of contingencies is necessary for its occurrence:—(1) Infection during gathering and importation is guarded against as far as possible, and is therefore not of frequent occurrence; (2) considerable attenuation of infectivity in any infected material occurs before it is dealt with by the employee; (3) with such reduced infectivity there is little chance of infection, unless this is introduced directly to the mouth or inhaled; (4) a person employed in piecing only occasionally uses the saliva as a means of facilitating the process, and the probability of the strands of cotton requiring to be pieced just at the point where a portion of infected material is situated is small; (5) it is necessary, for infection to occur, that the individual should be susceptible to the disease. This susceptibility, though greater with age, is not common in vaccinated persons and practically non-existent in revaccinated persons. Operatives are supposed to do the operation of piecing without moistening the hands, but in some cases saliva is used. Occasional dipping of the hands in a solution of glycerine and water, however, would, after wiping, ensure a moist condition, and even the occasional use of saliva as at present would be quite unnecessary. If the cotton was so infective as to produce a case of small-pox by the mere handling frequent epidemics would be inevitable in the cotton industry, and it is probable that all instances of small-pox occurring in operatives in the cotton trade are due to the accidental introduction of the attenuated virus from the raw cotton into the system by the mouth.

### Carpets and Rugs.

The Census Bureau has issued a preliminary report on the carpet and rug industry, in which comparisons are made with the figures for 1904 and 1899. The statistics do not cover small establishments making carpets and rugs from rags, but do include a few large mills weaving colonial rag rugs on power looms. We give below the comment by the Census Bureau on the following, but for reasons explained in the correspondence between Director Durand and the editor of this journal, great caution should be exercised in drawing conclusions from these preliminary reports:

The amount of foreign wool used in the manufacture of carpets and rugs increased from 51,762,000 pounds in 1899 to 63,904,000 in 1909, or 23 per cent.; the cost thereof increased from $8,077,000 to $11,696,000, or 45 per cent. In addition, a considerable quantity of foreign wool is consumed in the manufacture of woolen and worsted yarn purchased by carpet manufacturers.

During the decade large increases were shown in the use of cotton, cotton yarn and jute. In 1899 foreign and domestic wool, tops, woolen yarn and worsted yarn constituted 55 per cent. of the principal materials used, while in 1909 they formed only 45 per cent. This difference in the relative consumption of the leading wool materials is undoubtedly due to the high cost of carpet wools.

The total value of products increased from $48,192,000 in 1899 to $71,854,000 in 1909, or 49 per cent., showing a substantial growth for the industry during the decade. In 1899 the number of square yards of carpets and rugs were 76,410,000, compared with 91,829,000 in 1909. In 1899 rugs, woven whole, constituted only 16 per cent. of the total, or 12,172,000 square yards, while in 1909 they constituted 39 per cent. of the total, or 35,596,000 square yards. Although the census returns showed an increase in the manufacture of carpets from 1899 to 1904, the number of square yards manufactured in 1909 was nearly 10,000,000 less than in 1899.

Of the various kinds of carpets produced during the decade, axminster and moquette showed an increase of 49 per cent. in quantity and 57 per cent. in value, and tapestry brussels increased 41 per cent. in quantity and 60 per cent in value. The output of 2-ply ingrain carpets decreased from 36,698,000 square yards in 1899 to 20,869,000 square yards in 1909, or 43 per cent. and the decrease in value was relatively greater. All of the various kinds of rugs showed remarkable in-

creases except Smyrna, which decreased 62 per cent. in quantity.

The following statement shows the imports of carpets and rugs, both as to quantity and value, by countries, for the fiscal years 1909, 1904 and 1899:

Only high grade rugs are imported into the United States and the total imports amount to a very small percentage of the carpet and rug consumption. Turkey supplied more than any other country, the imports therefrom amounting to 670,098 square yards, valued at $2,937,326, in 1909. The United Kingdom is the next largest contrubutor, after which Persia and British East Indies follow in the order named. The exports of carpets and rugs of domestic manufacture are insignificant, amounting to only 67,088 square yards, valued at $66,653, for the fiscal year 1909.

### Wool and Wool Goods Imports.

The imports of wool for the twelve months ending December, 1910, show a heavy decrease as compared with the preceding year. The figures for these two years are as follows:

| | 1909 | | 1910 | |
|---|---|---|---|---|
| Class 1 | 143,801,339 lbs. | $31,168,481 | 84,596,558 lbs. | $21,040,633 |
| Class 2 | 32,109,321 " | 7,655,157 | 17,488,599 " | 4,578,781 |
| Class 3 | 136,220,511 " | 16,706,728 | 78,049,824 " | 10,483,033 |
| | 312,131,171 lbs. | $55,530,366 | 180,134,981 lbs. | 36,102,447 |
| WOOL GOODS. | | | | |
| Carpets | 1,161,031 sq. yds. | $4,550,933 | 1,136,056 sq. yds. | $4,148,636 |
| Cloths | 5,800,276 lbs. | 5,991,686 | 5,430,730 lbs. | 5,682,180 |
| Dress Goods | 44,314,243 sq. yds. | 8,637,286 | 41,610,306 sq. yds. | 8,272,280 |
| All Other | | 1,239,684 | | 1,338,749 |
| | | 22,058,711 | | 21,587,496 |

### A New Use for Kapok.

Kapok is a fiber which in its natural state serves as a covering for the seeds of certain trees in the Malaccas. Attempts to spin the fiber have thus far failed, but it has been used for life-preservers with excellent results, owing to its buoyancy, the statement having been made on good authority that kapok will support in the water thirty-five times its own weight. This quality has been utilized by a German inventor, Kurt Mueller, Chemnitz, in his invention of a basket for balloons, which, it is claimed, will continue to float if the balloon falls in the water. Many fatal accidents to aeronauts have occurred owing to their balloons having fallen in the water and sunk immediately to the bottom. The German invention consists in lining the balloon baskets with cushions or padding filled with kapok. A test of the kapok-lined basket was recently made at the works of the Chemnitzer Oktienspinnerei, Chemnitz, before a number of spectators. A balloon basket loaded with 44 pounds of stone sunk to the bottom at once when let fall into the Chemnitz river. Four kapok cushions were then fastened on the same basket, which was then loaded with four persons weighing five hundred and fifty pounds. The basket with its human freight was then dropped into the river and it floated safely on the surface of the water, despite the violent rocking of the basket by the occupants, thus demonstrating, not only the buoyancy of kapok, but also the confidence of the four persons in its merits as a life-preserver.

### Textile Trust in Russia.

The organization of a trust by the Russian manufacturers of bags has aroused the sugar refineries in that country to active resistance. The bagging trust made a material advance in prices, and the refiners replied with the announcement of plans for establishing their own bagging mill. It would require a long time to get relief from the new mill, during which the high prices fixed by the bagging trust would mean a large increase in the cost of producing sugar. Accordingly the refiners applied to the government for relief, and the Minister of Commerce yielded to their demands by remitting the tariff on bags imported into Russia.

The supply of cotton in the United States for the year ending Aug. 31, 1910, was 12,188,021 bales, a decrease of 20 per cent. over the previous year.

## Organized Short Time.

Associazione Cotoniera Italiana.
Milano, 31st March, 1911.

*Editor Textile World Record:*

Dear Sir: In this month's number of the Textile World Record I find an article about "Organized Short Time" in which this measure is treated as a failure. The anonymous writer refers to Italy as the first example, stating that this country has furnished the latest proof of the failure of organized short time in Europe, so that any attempt of a new agreement on this line would be useless. Although I am grateful to the Textile World Record to find it worth while to mention the experiment of short time, made in Italy in 1910, through the efforts of our Italian Cotton Association, I strongly object to the criticism describing it as a failure, and protest against the close of the article, which although expressing itself rather generally, leaves an idea that also the Italian spinners have failed to keep to the rules of the agreement.

Our organized short time has been in no way a failure. It was started at a moment when spinners had accumulated enormous stocks of yarn, amounting to nearly 10 lbs. per spindle and was not renewed on the 1st February, 1911, chiefly because statistics showed that the stocks had gone back to the normal amount of about 5 1/2 lbs. per spindle. Short time has saved our industry from more serious disasters, and even those spinners who had to suffer from it fully recognize the benefits it has brought to the industry in general.

Our organization has worked quite regularly during the 12 months of its existence and I can state in the most formal way that all orders of stoppage were executed by the members with the greatest care and regularity. Of course if one had to try it again, it would perhaps be wise to make some alterations in the agreement, but even these changes have already been discussed and agreed upon, and I consider that such a scheme is the only way which allows Europe to face with some success the excesses of American speculation.

I do not know the reason why the writer of the article is so badly disposed towards organized short time. He certainly does not show much sympathy for the International Federation of Master Cotton Spinners' and Manufacturers' Associations, because this organization has been the most important factor in promoting a general adoption of short time and by these means has been able to break an exceedingly strong coalition, which was taking advantage of small crops by pushing the prices to prohibitive limits, and certainly it would have happened again in 1910 if the organized short time generally adopted in Europe had not acted as a safety-valve. But this is not the only item showing the necessity of an International Organization such as the Federation. Many other matters of an international character are treated by it and recorded in the annual reports which are certainly known to the Textile World Record.

From these reports you will have seen, that our American friends are frequently giving us reason for complaints with regard to cotton transactions. I consider these matters together with those of the short time quite sufficient to justify the existence of the International Federation and of its annual Congresses. Trusting you will do me the favor to publish these lines in your well known paper, I remain, Dear Sir,

Yours truly,

Georgio Mylius.

Senior Vice-President of the Italian Cotton Association. Member for Italy in the Committee of the Int. Federation of Master Cotton Spinners' and Manufacturers' Associations.

Signor Mylius is the victim of a number of errors. The article to which he takes exception was not anonymous. It was part of the Monthly Comment by the editor, which is a regular feature of this magazine and for which we assume entire responsibility. It is not customary in this country and we do not think it is customary in Italy for the editor's name to be affixed to every editorial. A certain position and form indicates that it is editorial thunder and no one has any excuse for being deceived.

It is not necessary for us to engage in any controversy as to the success or failure of organized short time in Italy, because Signor Mylius' own statements corroborate our view that organized short time no longer exists in that country. Whether the reason he assigns for this condition is well-founded or not is immaterial. The fact remains that the cotton spinners of Italy are no longer parties to an agreement to restrict the production of yarn or the consumption of cotton in accordance with a prearranged plan. That fact substantiates our claim. Moreover there is nothing in our March editorial that charges, intimates or even remotely hints at a failure on the part of the Italian spinners to obey the rules of their short time agreement while it was in force.

Signor Mylius is also in error in charging us with being badly disposed toward organized short time. We are only trying to tell the truth about it. His error results from a failure to understand that an organization for short time is more in the nature of an effect than of a cause. To be sure an organization is necessary for united action, but the fundamental requirement of successful organization is the necessity of the trade.

The error of Signor Mylius that grieves us most, however, is his charge that we lack

sympathy for the International Federation of Master Cotton Spinners and Manufacturers' Associations. We admit that we do not sympathize with its main object, which is to regulate the price of cotton by getting cotton manufacturers throughout the world to restrict consumption in accordance with a prearranged plan. For the first two years of its existence the Federation denied that this was its main object, and we were subjected to much severe criticism, which at times approached obloquy, for maintaining that this was the Federation's sole object in life. Finally at Paris in 1908, when the Federation had reached the age of four years, it acknowledged by formal resolution that short time is the only real remedy for the evils it was organized to remedy. In our July, 1908, issue we commented on this resolution as follows:

> This resolution is a frank admission of the main object of the International Cotton Federation. That object has been evident from the first inception of the Federation, which was brought into being by the shortage of cotton in 1904 and the consequent necessity for cotton spinners to run on short time. The usefulness of the Federation in this and other directions has for three years been somewhat impaired by an effort to keep the main object of the organization in the background. It is to be congratulated on the Paris short time resolution because that object, restricting the consumption of cotton to meet the exigencies of the markets for raw cotton and manufactured goods, is altogether proper and right.

Our objection is not to the principle of organized short time, but to its application to include both American and foreign cotton manufacturers in a common agreement. That would mean the alliance of American and foreign manufacturers for the purpose of depressing the value of the product of American cotton growers. It is an unjust and unpatriotic proposition, and if carried out would mean the end of tariff protection in the United States.

Surely, however, we can oppose this feature of the Federation's work without laying ourselves open to the charge of lacking sympathy for that organization. The "many other matters" mentioned by Signor Mylius include questions on which we are in entire agreement with the Federation. Among these are improving the baling of cotton, unifying the weights and measures of the textile world, and combating the evils of speculation. We have given proof of our sympathy with the Federation. On Sept. 20, 1905, at Atlantic City, we recommended to the New England Cotton Manufacturers' Association that the cotton manufacturers of Europe be invited to visit the United States and meet our cotton growers and manufacturers in a friendly international conference. That recommendation was adopted and as a result international conferences of cotton growers and manufacturers were held at Washington in 1906 and at Atlanta in 1907, the last named attended by more than one hundred delegates from Europe. We much prefer to have this achievement recorded by others rather than by ourselves, and we mention it now in order that Signor Mylius may understand our position and avoid errors that involve a certain ingratitude to those who have tried to help the International Cotton Federation since it made its first appearance upon the scene.

## THE NATIONAL ASSOCIATION OF MANUFACTURERS.

The sixteenth annual convention of the National Association of Manufacturers, of which John Kirby, Jr., is president, will be held at the Waldorf-Astoria, New York, on May 15, 16 and 17. One of the principal subjects for discussion will be the labor question and the consideration of subjects relative to the prevention of accidents in factories and the solution of the urgent question of industrial relief and compensation of the workmen. Other questions of economic importance such as immigration, industrial education, reform of our patent laws and the creation of an independent commission of experts will also be considered. The sessions will be open to the general public and the association extends a cordial invitation to all manufacturers to attend, whether members of the association or not.

## MEETING OF THE AMERICAN WOOLEN AND WORSTED MANUFACTURERS ASSOCIATION.

The spring meeting of the American Woolen and Worsted Manufacturers' Association will be held on May 18th at the Waldorf-Astoria Hotel, New York City. The morning meeting, which is called for ten o'clock, will be an executive session and will be devoted to routine and special business to come before the association. It is understood that there may be some discussion of the question of costs, as well as the matter of copying styles and designs. The afternoon meeting, which opens at two o'clock, will be an open session at which papers of general interest to the trade will be read and discussed.

## THE RICHMOND MEETING OF THE AMERICAN COTTON MANUFACTURERS ASSOCIATION.

The fifteenth annual convention of the American Cotton Manufacturers' Association will be held on May 18th and 19th at the Hotel Jefferson, Richmond, Va. An interesting program has been prepared as follows:

THURSDAY, MAY 18—10 A. M.

Call to order by President D. Y. Cooper.
Prayer—Rev. Samuel D. Hatcher.
Address of Welcome—Hon. D. C. Richardson, Mayor of Richmond.
Reply to Address of Welcome.
Annual Address—President D. Y. Cooper.
Address—"Efficiency and Scientific Management," Harrington Emerson, Boston, Mass.
Address—"Suggestions as to the Increase of Our Cotton Piece Goods Trade in China," Dr. Gilbert Reid, Missionary to China.
Address—"Proper Illumination of Mills," J. M. Smith, Buckeye Electric Company, Cleveland, O.
Report of Joint Committee on Cotton Exchanges, Lewis W. Parker, Chairman, Greenville, S. C.
Report of Committee on Excess Tare and Cotton Warehousing, John A. Law, Chairman, Spartanburg, S. C.

Adjourn.

AFTERNOON SESSION—2.30.

Address—"The New York Cotton Exchange," Arthur R. Marsh, President, The New York Cotton Exchange, New York, N. Y.
Address—"Gin Compression—The Advantages to Mills and the Necessity of Encouraging the Farmer to Use Such Compression," W. A. Gilreath, Greenville, S. C.
Address—"The Price Campbell Cotton Picker from Personal Observation," H. B. Jennings, President, Jennings Cotton Mill, Lumberton, N. C.
Report of Committee on Publicity, R. M. Miller, Jr., Chairman, Charlotte, N. C.
Report of Committee on Pan-American Union Conference, Chas. D. Tuller, Chairman, Atlanta, Ga.

Adjourn.

FRIDAY, MAY 19—10 A. M.

Address—"The Importance and Possibilities of a Cotton Goods Export Association," Howard Ayres, Secretary, Cotton Goods Export Association of New York, New York, N. Y.
Address—"The Present Status of the Cotton Ginning Industry the World Over," J. E. Cheesman, 68 William St., New York, N. Y.
Report of Committee on Uniform Sales Contracts, Lewis W. Parker, Chairman, Greenville, S. C.
Report of Joint Committee on Ginning, Baling, Buying, Tare, Etc., T. H. Rennie, Chairman, Pell City, Ala.
Report of Committee on By-Laws, Chas. H. Gorton, Chairman, Pawtucket, R. I.
Report of Secretary and Treasurer.
Report of Committee on Resolutions.
New Business.
Election of Officers.

The character of the addresses is of broad and general interest, which should appeal to all manufacturers. Some of the topics are of particularly timely interest and the speakers are men who are authorities on their subjects.

Richmond has already demonstrated its attractiveness as a cotton manufacturers' convention city. The committee on arrangements can be depended upon to make the meeting an enjoyable one. Besides the strictly business features the Chamber of Commerce of Richmond has planned to entertain the manufacturers and their guests on Thursday evening at the Hotel Jefferson Auditorium with music and other attractions. On Friday afternoon there is a baseball game. Richmond itself possesses so many buildings and scenes of historic interest that many in attendance will wish to avail themselves of the opportunity of visiting in the neighborhood.

The usual reduced rates will be allowed by the railroads, but it is necessary that a certificate be secured at the time of purchase of the going ticket. A representative of the

railroad company will O. K. the certificates at Richmond, thus enabling the holder to secure the benefit of the reduced rate on the return trip.

A large party is planning to make the trip by water via Merchant & Miners Steamer, leaving Boston Monday and arriving at Old Point Comfort Wednesday morning, where the day will be spent. They will take the evening train for Richmond, arriving about the same time as those who go by rail.

## NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS.

The accompanying diagram of Horticultural Hall, Broad Street, Philadelphia, shows the arrangement and allotment of space for the exhibition which is to be held in connection with the seventh annual convention of the National Association of Hosiery and Underwear Manufacturers in Philadelphia, May 22 to 26. The convention meetings will be held in Hotel Walton, which is almost across Broad Street. The program for the various sessions of the convention is as follows:

Morning Session, Tuesday, May 23, 1911.

Open Session.

To which the Hosiery, Underwear and Fancy Knit Goods Manufacturers are invited, members and non-members; also all the Associate Members.

Meeting called to order promptly at 10 a. m., in the Convention Hall of the Walton Hotel.

Reading of Minutes of the 1910 Convention.

Annual Report of the President.

Annual Report of the Secretary-Treasurer.

Reports of Standing and Special Committees.

Reports of Sub-Associations.

Report of Executive Committee.

Communications.

Miscellaneous Business.

All Knit Goods Manufacturers and Associate Members are earnestly requested to attend this session and to remain in the Convention Hall until adjournment.

. . .

Afternoon Session, Tuesday, May 23.

Executive Session.

Hosiery Manufacturers.

2.30 p. m.—Meeting of the various Hosiery Sub-Associations, as arranged and announced at previous session. See Bulletin Boards in Hotel Lobby and Exhibition Hall.

Underwear Manufacturers.

2.30 p. m.—Convention Hall. Special meeting of the Underwear Members. Manufacturers not members may attend this session upon application to the Secretary-Treasurer.

It is the earnest wish of the officers that all delegates promptly attend all sub-meetings in which their branch of the industry is under discussion.

. . .

Morning Session, Wednesday, May 24.

To which only Knitting Manufacturers and Associate Members are invited.

C. B. CARTER, SECRETARY OF THE NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS.

Admittance to hall will be strictly confined to those holding registration cards, which are given out from Booth 1 in Exhibition Hall, or supplied by the Secretary-Treasurer.

Meeting will be called to order promptly at 10, in the Convention Hall of the Walton Hotel.

Reports from Special Committees.

Dyeing of Hosiery, by J. H. Shuford of Berlin Aniline Works, New York City.

Lighting the Way to Profits in a Knitting Mill, by J. W. Smith, Buckeye Electric Co., Cleveland, O.

Miscellaneous Business.

Topics for Discussion, to be announced later.

New Business.

Resolutions

Discussions on questions presented.
Election of Officers.
Appointment of Committees.
Selection of Dates for Next Meeting.
Adjournment.

This session is a very important one. Every Hosiery, Underwear and Knit Goods Manufacturer should attend and remain in the Convention Hall until adjournment.

* * *

Afternoon Session, Wednesday, May 24.

Executive.

Hosiery Maufacturers.

2.30 p. m.—Meeting of the various Hosiery Sub-Associations, as arranged and announced at previous sessions. See Bulletin Boards in Hotel Lobby and Exhibition Hall.

Underwear Manufacturers.

2.30 p. m.—Convention Hall, Walton Hotel. Special meeting of the Underwear Members. Manufacturers not members my attend this session upon application to the Secretary-Treasurer.

In addition to the discussion of topics to be announced later, a question box will be introduced, into which inquiries and questions may be dropped by any one present. Box will be opened from time to time and contents will be read by the Secretary-Treasurer. Subjects suggested through this channel should prove of special interest and their discussion will redound to the members' welfare.

Manufacturers of Woolen Hosiery, Gloves, Mittens, Sweaters and Fancy Knit Goods.

2.30 p. m.—Will be provided with rooms, in which they may meet to discuss questions directly affecting their interests. See Bulletin Boards in Hotel Lobby and Exhibition Hall.

It is the earnest request of the officers that all knitting manufacturers promptly attend these sub-meetings, and that they take an active part in the discussion.

* * *

Wednesday Evening, May 24.

Arrangements are being consummated for a Smoker for Wednesday evening, to be given at the Walton Hotel, free to all wearing the Association's numbered badges. A cordial invitation is extended to all connected with the Knitting industry to attend, as it is felt that a function of this nature would add greatly towards bringing about a more friendly, cordial and intimate relationship, objects for which the Association was primarily organized.

* * *

Morning Session, Thursday, May 25.

Executive.

Beginning at 10 a. m. Special Meetings of Manufacturers of each line of Knit Goods will be held in different rooms of the Hotel, numbers to be announced later, as follows:

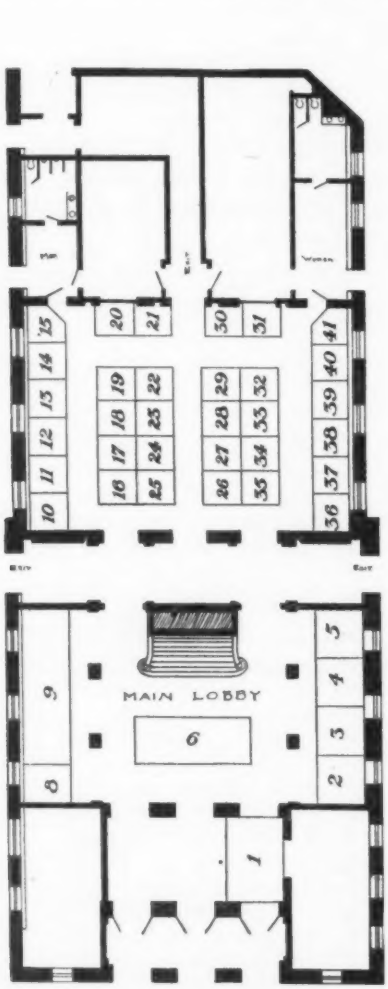
Room ..—Hosiery—Cotton.
Room ..—Hosiery—Woolen, including Gloves and Mittens.
Room ..—Underwear.
Room ..—Sweaters and Fancy Knit Goods.
Room ..—Associate Members.

These conferences should prove the most beneficial of all the sessions, and delegates should so arrange their engagements to be present.

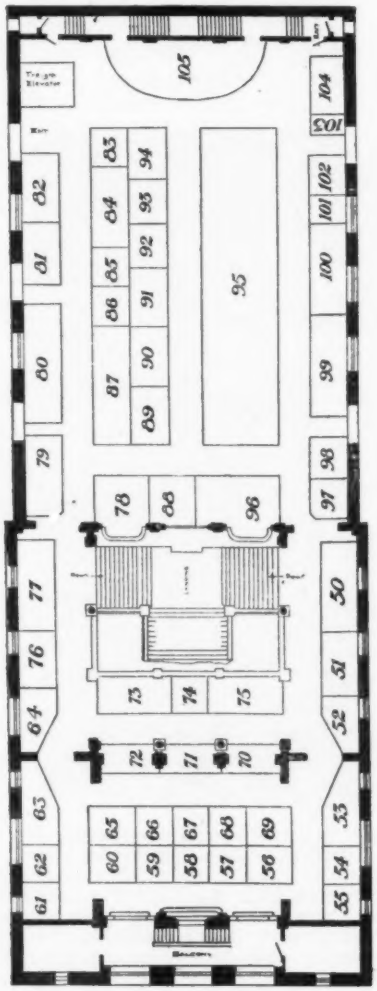
The exhibition is becoming more popular each year. More exhibitors have already contracted for space than ever before and it is probable that the capacity of the hall will be taxed to the utmost. The following is a list of those who have arranged for space up to the time of going to press. The numbers after the names refer to the spaces shown on the diagram:

Acme Knitting Machine and Needle Company, Franklin, N. H. ..... 6
American Laundry Machinery Co., Chicago and 132 W. 27th St., New York City ..... 4-5
American Wool and Cotton Reporter, Boston, Mass. ..... 104
Andreykovicz & Dunk, 58 N. Front St., Philadelphia ..... 70
Ballard Electric Cutter, 366 Bourse Building, Philadelphia ..... 97
Charles Beck Co., Ltd., 609 Chestnut St., Philadelphia ..... 83
Beckert Needle and Supply Co., 4921 Greene St., Philadelphia (Germantown) ..... 51
Berlin Aniline Works, 213 Water St., New York City ..... 72
Charles Bond Co., 520 Arch St., Philadelphia 81
H. Brinton Co., 213 Race St., Philadelphia 101-102
Cling Surface Co., Buffalo, N. Y. ..... 65-66
Continental Latch Needle Co., 120 Liberty St., New York City ..... 92
Cotton Publishing Co., Atlanta, Ga. ..... 3
J. B. Ford Co., Wyandotte, Mich. ..... 84
Foster Machine Co., Westfield, Mass. ..... 52
Grand Rapids Textile Machinery Company, Grand Rapids; Mich. ..... 8
Grosser Knitting Machine Co., 260 W. Broadway, New York City ..... 95
C. E. Hardenbrook, 44 N Fourth St., Philadelphia ..... 82
Harding & Fancourt, Inc., 1095 Germantown Ave., Philadelphia ..... 88
Harding, Tilton & Co., Boston, Mass... Landing
Hemphill Manufacturing Co., Pawtucket, R. I. 77
John W. Hepworth & Co., Mascher and Lehigh Ave., Philadelphia ..... 90
Jenckes Knitting Machine Co., Pawtucket, R. I. ..... 100
Kaumagraph Company, 110-114 W. 32d St., New York City ..... 86
Knit Goods, 118 E. 28th St., New York City.. 4

Lehigh Valley Silk Mills, South Bethlehem, Pa. ..... 80
H. Mainin, 366 Bourse Bldg., Philadelphia..... 97
Manufacturers' Supplies Co., Juniper and Cherry Sts., Philadelphia ..... 76
George D. Mayo Machine Co., Laconia, N. H. 95
McConnell & Co., Ltd., Manchester, England 93
Nonotuck Silk Co., 1027 Arch St., Philadelphia 85
Paxton & O'Neill, 541 N. Third St., Philadelphia ..... 80
Philadelphia Drying Machine Co., 6721 Germantown Ave., Philadelphia ..... 96
Posselt's Textile Journal, 2026 Berks St., Philadelphia ..... 91




FIRST FLOOR



SECOND FLOOR

Merrow Machine Co., Hartford, Conn. ..... 98
Metropolitan Sewing Machine Co., Nyack, N. Y. ..... 105
Meyer Cord Company, Chicago, Ill. and Philadelphia ..... 2
Edwin A. Newton, 310 N. 4th St., Philadelphia 69
Nicetown Dye Works, C and Westmoreland Sts., Philadelphia ..... 78
Roessler & Hasslacher Chemical Co., 100 William St., New York City ..... 87
The Rose Machine Co., Grand Rapids, Mich. 68
Scott & Williams, Inc., 2079 E. Cumberland St., Philadelphia ..... 95
J. L. Shoemaker & Co., 15 S. 6th St., Philadelphia ..... 64

Smith, Drum & Co., Coral and Cumberland Sts., Philadelphia ..... 9
E. O. Spindler, 350 Broadway, New York City .....16, 17, 24, 25
Standard Machine Co., 12th and Callowhill Sts., Philadelphia ..... 50
Alfred Suter, 487 Broadway, New York City.. 105
Textile Machine Works, Reading, Pa. ..... 10-11
Textile Manufacturers' Journal, 377 Broadway, New York City ..... 89
Textile World Record, Boston, Mass. ..... 79
United States Truck Co., Bourse Bldg., Phliadelphia ..... 94
Universal Winding Co., Boston, Mass. .... 73-74
Union Special Machine Co., 731 Arch St., Philadelphia ..... 75
Wildman Manufacturing Co., Norristown, Pa. 99
Wholefoot Hosiery Stamp Company, 1310 N. Lawrence St., Philadelphia ..... 103
Thomas Wolstenholme Sons Co., 3300 Frankford Ave., Philadelphia ..... 5
O. F. Zurn Co., Broad St. and Lehigh Ave., Philadelphia ..... 53

## THE TESTIMONIAL DINNER TO WILLIAM WHITMAN.

Four hundred manufacturers, merchants and business men gathered at the Hotel Somerset, Boston, on April 26th, on the occasion of the testimonial dinner to William Whitman.

The dinner was served in the large ballroom and the guests were seated at small tables accommodating six each. Handsomely engraved menu cards contained the list of those participating and on the front cover was a photograph of Mr. Whitman.

John P. Wood, Mr. Whitman's successor as president of the National Association of Wool Manufacturers, was the presiding officer, and with him at the head table besides the guest of the evening were Richard C. McLaurin, president of the Mass. Institute of Technology; John Hopewell, chairman of the committee on arrangements; Hon. John T. Cahill, mayor of Lawrence; Frederick S. Clarke, president of the American Association of Woolen and Worsted Manufacturers; William B. Plunkett of the Berkshire Cotton Mfg. Co.; Stephen O'Meara, police commissioner of Boston; Charles H. Doty, assistant treasurer of the United States; Franklin W. Hobbs, president of the National Association of Cotton Manufacturers and treasurer of the Arlington Mills; Hon. John D. Long, ex-governor of Massachusetts; Hon. Eben S. Draper, ex-governor of Massachusetts; Hon. Samuel Powers, ex-congressman; George S. Smith, president of the Boston Chamber of Commerce; Judge Wm. A. Day, president of the Equitable Life Ins. Co.; Charles H. Hutchins, president Crompton & Knowles Loom Works; Clarence Whitman, of Clarence Whitman & Co. of New York and Frederick P. Vinton.

Mr. Wood, in opening the after dinner exercises, called attention to the fact that for a generation Mr. Whitman has been the guiding spirit in the work of the National Association of Wool Manufacturers and that for upwards of seventeen of its fifty years of existence he has served as its president. In behalf of that association he announced its presentation to Mr. Whitman of a portrait of himself by the eminent artist Frederick D. Vinton as an evidence of its regard, esteem and appreciation. It had been hoped that this portrait might have been presented at this banquet, but owing to Mr. Whitman's recent illness, the sittings were delayed so that the portrait was not completed.

Mr. Wood introduced as the toastmaster of the evening ex-governor John D. Long, whose wit and graceful introductions added much to the pleasure of the occasion. Letters of regret at inability to be present and of appreciation of Mr. Whitman were read by Mr. Hopewell from Senators Lodge, Crane and Gallinger, from Gov. Pothier of Rhode Island, Gov. Foss of Massachusetts and from William M. Wood, president of the American Woolen Co.

President McLaurin of the Mass. Institute of Technology spoke of the benefits of technical training for a manufacturing career and how much Mr. Whitman had done to bring business and scientific learning together. William A. Day, president of the Equitable Life Insurance Co., spoke of Mr. Whitman's service as one of its directors. Mayor Cahill of Lawrence told how much the prosperity of that city is dependent upon the industries built up by Mr. Whitman. Ex-Congressman Samuel L. Powers and Geo. S. Smith, presi-

dent of the Boston Chamber of Commerce were others who brought greetings to the guests of the evening.

An interesting feature was the display on a screen of the mills and factories in which Mr. Whitman is interested as officer or selling agent. Mr. Hopewell gave the details of these enterprises, the total invested capital of which amounts to over $16,000,000, employing about 13,000 operatives.

The last speaker of the evening was Mr. Whitman himself, who was greeted with great applause and his remarks listened to with close attention. He acknowledged with much feeling the many tributes that had been paid him during the evening and his appreciation of the great honor. He then told the story of his business career, showing how closely it was interwoven with the growth of the textile industry. Mr. Whitman said in part:

Some friends have suggested that instead of delivering a formal address this evening it would be more appropriate for the occasion and perhaps more interesting to you, if I talked somewhat informally about my personal experiences in connection with the development of the textile industries.

There are relatively few boys beginning the work of life so circumstanced that they are free to make choice of a vocation. Necessity compels securing such employment as may be obtained for livelihood, without reference to special fitness for the work. When some great dominating predilections exist, an industrious and ambitious young man often succeeds in bursting the bonds of his environment and finds his natural and therefore most efficient sphere of labor. Most of us, however, drift through life, and there are consequently more misfits than fits in every vocation.

My earliest recollections are of the farm upon which I lived during the first six years of my life. The next six years' experiences belong about equally to my grandfather's farm and to my father's village store. On the farm I became familiar not only with sheep husbandry, but with the wool manufacture as a household industry for family clothing—an industry which embraced all the processes used, such as cleansing of wool, hand carding, spinning, dyeing and hand loom weaving. Memory of the cumbrous hand loom in my great grandmother's kitchen and of the good lady herself when 100 years of age engaged in knitting woolen stockings, is still vivid.

The seaside village store was an excellent training school. I know of none better for a boy. There one could learn in a limited but practical way the comparative values of the products of the factory, of the soil, and of the sea, and the nature of exchanges. But whether on the farm, in the village store, or in my home I was expected to lend a helping hand. The expectation fitted in with my inclinations, for I think that during my whole life I have enjoyed work.

At the age of 12 I left home alone and for the next two years was employed by a wholesale and retal dry goods firm in St. John, New Brunswick. During this period I had the advantage of excellent training, and of varied employment such as seldom falls to the lot of a boy. First in the counting room under an accomplished accountant; in addition to the routine work belonging to an office boy I became a good rapid penman and quick and accurate at figures. There was hardly any kind of work about the business that I did not assist in performing and with which I was not perfectly familiar.

Little events often change the current of men's lives. In those days there were no saleswomen. The retail salesmen were for the most part full grown, highly trained men, obtained from England, Scotland and the North of Ireland. One of these men, without provocation, violently kicked me. I left the store at once and could not be persuaded to return. I had determined to come to Boston, and to Boston I came alone in the early summer of 1856 at the age of 14. The overt act had clinched the decision.

For the first and only time in my life I solicited employment, and was fortunate in securing it with the firm of James M. Beebe, Richardson & Co., then the leading wholesale dry goods importing and jobbing firm in the United States. The firm name was soon changed to James M. Beebe & Co. I remained with the house for about 11 years or until it went out of existence, being the last person in its employ. I began as an entry clerk, but was rapidly promoted from one position to another until I became confidential clerk and general office manager.

Some time prior to the close of the Civil War, Messrs. Beebe & Co. retired from the importing and jobbing business and engaged in the wholesale dry goods commission business, becoming the selling agents for several corporations manufacturing ginghams, prints, delaines, spool cotton and woolen cloths, a part of which business was taken over from the old firm of A. & A. Lawrence & Co. when it went out of business.

In the early part of 1867 I formed a connection with Robert M. Bailey & Co., who were then selling agents of the Arlington Woolen Mills, the name of which was afterwards changed to Arlington Mills. At about the same time I was elected to the treasurership of this corporation. The original mill had been destroyed by fire the previous year and the new mill was in course of construction. It was intended for a shirting flannel mill, but the owners decided to engage in the manufacture of women's and children's dress goods made with cotton warp and worsted filling. I have been connected with this concern in various capacities from that time to the present with the exception of about six months in 1869. During that intermission I became part owner of a mll at Ashland, N. H., manufacturing fancy shirting flannels.

It was not until 1888 that I engaged in mercan-

tile business on my own account. On the first of January of that year I entered the firm of Harding, Colby & Co., and my firm became the selling agents of the Arlington Mills.

A little more than a year later Mr. Colby died, and in December, 1889, the firm was succeeded by the firm of Harding, Whitman & Co., of which I became the managing partner, and on July 1, 1909, it was succeeded by the present firm of William Whitman & Co.

In 1895 I became interested in cotton manufacturing in New Bedford, beginning with the Whitman Mills and continuing with the Manomet Mills, Nonquitt Spinning Co. and Nashawena Mills.

In 1910 I engaged in building a worsted and merino spinning plant in Lawrence, which is just completed. It will probably be incorporated under the title of "Monomac Spinning Co."

In 1909 I became interested in building a cotton mill at Calhoun Falls, S. C.

The firm of William Whitman & Co. act as selling agents for all the mills just named, except the Whitman Mills.

So much by way of qualification for talking to you with some degree of familiarity about the development of the textile industry during the past 57 years. This slight sketch exhibits a rather striking contrast to recent pictures that have appeared in some public prints.

In 1856 Boston was the center of the cotton and wool textile industries of the country, both as to the manufacture and as to distribution. It also enjoyed the prestige of being the most prominent of the dry goods jobbing cities. Twice a year from every quarter buyers came to it. During the busy seasons the packing rooms of my employers were filled with miscellaneous goods for shipment. Traveling salesmen were not then employed. The buyers of that day or their successors have outgrown their original sources of supply in textiles. The methods of distribution have been revolutionized.

Boston failed to maintain its supremacy as a manufacturing and distributing center because its capital and efforts were turned to other channels of development, which, unfortunately, were regarded with greater favor than the textile business. During the last decade, however, a marked change favorable to textile industries has taken place in the attitude of Boston investors.

In the early days of our textile industries we were told that because of the quality of the water, of climatic and other conditions, it would not be possible for American manufacturers to bleach, color or print their fabrics as well as it was done abroad. Such statements were generally believed, and naturally accentuated existing prejudices against American fabrics. What has been accomplished must have disappointed these unbelievers. Within a few days one of the oldest and best merchants in this city, an importer of foreign goods all his life, declared to me in emphatic terms that our fine cotton fabrics of today, in perfection of manufacture, in design, in the bleaching, coloring, printing and finishing, were equal to any goods of similar grade produced in any part of the world. This is true, however, not only of cotton fabrics, but equally so of textiles made of wool, or of silk, or of combinations of cotton, wool and silk.

The worsted branch of the woolen industry in our country had its origin in 1845 at Ballardvale, Mass. The first goods to be manufactured were an imitation of the French muslin delaine, but using a cotton warp instead of a worsted warp. The attempt was made by Mr. John Marland in a limited way. The wool used was combed by hand. The undertaking proved a failure, but in 1853 the first Pacific Mill was built for the avowed purpose of manufacturing worsted dress goods for women's wear, and more especially for the manufacture of cotton warp muslin delaines, which were then being extensively imported into the United States from Great Britain. To this corporation belongs the honor of importing the first wool combing machine into this country, the importation being made in 1853 and the manufacture of the goods beginning in 1854. This same machinery had been used, however, in England for five or ten years prior to this period. The Pacific Mills imported six Lister combing machines, and the first goods that were produced were printed by printing machines, at that time a departure from the block system of printing that had been in vogue. The first treasurer of the Pacific Mills was Mr. Jeremiah S. Young, who had been previously associated with Mr. John Marland; he was a brother-in-law of Mr. Marland and a son-in-law of Mr. Abraham Marland.

From this small beginning the City of Lawrence has become the greatest wool combing city in the United States.

The greatest development in the woolen industry has been in the production of what are known as worsted fabrics for men's wear. It is somewhat difficult to fix the exact date when American manufacturers began the making of such goods, but it was at some time subsequent to 1867, and undoubtedly they were produced almost simultaneously by to or three different manufacturers.

From the very beginning of the manufacture of worsted men's wear goods it has been predicted that such fabrics would diminish in popularity, but as a matter of fact with each succeeding year for more than 40 years they have become relatively more and more popular, and have displaced to a large extent woolen fabrics that had been previously made.

It does not follow, however, that what are known as worsted fabrics will displace what are known as woolen fabrics, because in the very nature of things many classes of worsted fabrics fail to meet requirements which can be successfully met with what are known as woolen fabrics. Each branch of the woolen industry has its proper functions and opportunity. The future development of all branches of the industry will be governed by the character of the wools produced incident to the best methods of sheep husbandry.

It is evident that the trend of the whole textile manufacture is toward finer and lighter weight fabrics, this without regard to the nature of the materials used. Not only this, but with every year the demand for better goods increases. Goods that were salable when I became interested in manufacturing would not be salable now. The cost of making up garments has a marked influ-

ence upon using better materials. Of course there are always exceptional cases and exceptional periods, but it is recognized that it is cheaper for the consumer to buy better cloths for garments or garments made of better cloths. They are handsomer in appearance, more serviceable in wear, and therefore cheaper in the end. I know that the opposite of this has been generally believed, and particularly so in reference to woolen and worsted fabrics, but that I am correct in my view is confirmed by the preliminary report issued a few weeks ago by the Bureau of the Census.

I believe in the greatest possible diversification of national industries, and that any industry in which a unit of labor will produce as much in our country as in a foreign country should be encouraged. I believe that the welfare of our country will be promoted by the fullest development of textile industries. I believe also that from their very nature the prosecution of these and kindred industries appeal especially to New England skill and enterprise for the employment of her people. Full employment insures prosperity. (Applause.)

The future is full of hope. The achievements of the past will prove to be but forerunners of the greater things to come, and I hope as long as health and strength will permit to continue to perform my part in this great work. (Great applause.)

Great credit is due to the work of the committee of arrangements for the success of the occasion and the smooth running of every detail. This committee was composed of Messrs. John P. Hopewell, chairman; Jacob F. Brown, Frederick C. Dumaine, Edwin Farnum Greene, Charles H. Hutchins. Charles W. Leonard, James W. Prendergast, Phillip Stockton and William H. Wellington.

---

The number of spindles in the cotton spinning industry of Japan in 1910 was 1,756,799, the output of yarn 1,038,874 bales, and the exports 306,758 bales.

The number of bales of raw cotton shipped last year from the United States was 7,096,600, the value being $530,798,957. In 1909 there were exported 7,576,153 bales, the total value being $461,919,568. It will be noted that although the shipments last year in weight were nearly half a million bales less, yet the value was distinctly larger than in 1909. The average price obtained in 1910 was 14 9/16 cents per pound, this being the highest figure for over thirty-five years back. The average price in 1909 was only 11 7/16 cents per pound.

## MILL EXPERIENCES.

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay of course for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

The article in this issue describes some peculiar troubles of an overseer of weaving and how he overcame them.

## HOW I STOPPED SOME TROUBLE IN A WOOLEN WEAVE ROOM.

*BY AN OLD-TIMER.*

Years ago good overseers in textile mills when unemployed found it easier to get a good position in a shorter time than they do nowadays, from the fact that manufacturers thought more of a good overseer then than they do now.

Having made an applicaton for a position as boss weaver in a 20-set mill years ago, the agent requested me to come to the mill for an interview. I called on him a few days after receiving his invitation and the conversation I had with him in regard to his weaving department led me to believe that I did not want the position. He had three boss weavers employed at that time doing what I considered the work of one good man. I learned that his object in having three weavers was that they would work against one another to see who could get out the most goods. We parted good friends after my telling him that if ever he put his weaving under one overseer I would consider the position, if I was out of employment. Some years afterwards he decided to put the different weaving departments under one overseer and the agent made inquiries as to my present address. Unable to get it on account of my being in the West, they continued to run on as they had been in years past, with three overseers. On my return from the West the agent of this mill happened to come to a town in Connecticut where I was stopping for a few days. I saw him on the street and he asked a business man what my name was

and when told he requested the man to ask me to call on him at the hotel that evening, which I did, and we talked over the matter of taking the position as overseer of weaving at his mill.

During the years which had elapsed after our first interview, I was informed that his superintendent had been boss weaver in one of the weave rooms for some time and had been promoted to the position as superintendent and that he was the overseer of weaving instead of the men who had the name of taking charge. I told the gentleman that I understood the conditions at their mill were such that a good man could not get along with his superintendent. He promised that if I would take the position I need not take orders from anyone but him. I realized that this was a queer way of managing a mill, but being out of employment I accepted his offer. I was told when I called at the mill on a certain morning to wait for the agent and not talk with anyone else. I did so, and was shown through the different weaving departments by the agent instead of the superintendent. I was introduced to none. During the forenoon of the first day a man came to me and introduced himself as the superintendent. We exchanged a few words and about an hour afterwards he sent for me to come to one of the weave rooms and pointed out something which he wanted done and which I thought was a starter to show his authority. I did as he advised.

After a few days I marked a certain warp for a loom, having looked up the different fillings and found that there was plenty on hand. In the course of a few hours when the old warp was woven out and the new one put in, I went to the loom to look over the pattern to see if it was started right and to see if the different kind of fillings were put in as they should be, took the warp ticket to make a note of the style on my note book and discovered that the ticket was not marked for that loom. I went into the broad alley and found the warp which I had marked for that certain loom still on the floor. I called the loom fixers and inquired why they put a warp into the loom which was not marked. They said they were given orders by the superintendent to put in the one they had in the loom instead of the one which I had marked a few hours previously. I ordered them to take the warp out of the loom and put the one in which I had ordered and told them never to make any change in warps without first consulting me. They hesitated for some time about taking out the warp, waiting to see if the superintendent would come along and insist on the warp being left as it was.

I watched their movements and when I thought I had given them sufficient time to remove the warp I went to them and asked what they intended to do, and whether they were going to take out the warp or not. They finally took it out and got the proper one in the loom and ready to hook up the harness when the superintendent came through and they called his attention to the matter. He came to me and gave me to understand that he did not want that warp in the loom. I learned afterwards the reason was that this weaver was a favorite and the warp I had marked was not as good as the one he insisted on putting in the loom. I told him that I had had charge in a large number of mills but never had anything of that kind happen to me before and did not think that a superintendent should interfere with an overseer's order without coming to him first and finding out the reason for the change. We argued over the matter for some time, but the warp I had marked remained in the loom and nothing further was said.

The mill was running on men's wear cheviots which had considerable double and twist yarn warp and filling. One particular style had a lemon and black twist yarn which when finished showed very rowy. Having had experience with this same color years before, I knew that I would have to use all the shuttles I could get on this particular color. I took the filling draft and found I could get only six shuttles on the pattern, running the colors pick and pick, but could get seven shuttles by running one-half of the pattern 2 and 2, but this I knew would not help the uneveness. When the first cut of that style was finished, I was called to the

finishing room to look over the piece and told that more shuttles would be required. I informed them that I had all the shuttles on which could be woven on that pattern, and that the only thing to do was to have the filling yarn shaded after it left the steam box. I insisted on the filling carrier calling the man who started the warps to examine all the yarn after it left the steam box and instructed this man to let no bobbins go to the loom which were wet, but have them returned to the dressing room for warp yarn. I also examined the take-up and let-off on the loom to see that these two parts were working in good shape. I thought then that everything possible had been done, but kept a watch on that particular line to see if I could find any possible way to improve it. In the course of a few weeks we had 20 or 30 looms running on this style and when each cut was finished I was called to the finishing room to look over the pieces.

They were still rowy but not as bad as the previous lots. I called the superintendent's attention to what had been done to overcome this difficulty and he said that more shuttles should be put on. I told him that the pattern would not allow any more shuttles without weaving it 2 and 2, which I knew would not improve the goods. He thought that more shuttles could be put on by weaving it pick and pick. I had tried doing this for several evenings at home but did not succeed in getting a filling chain draft that would weave with seven shuttles.

This mill had a boss weaver in a small mill some distance from the large one who was very friendly with the superintendent and was considered an expert on chain drafts. They got their heads together to see what they could do and finally put on a chain seven shuttles weaving one-half of the pattern 2 and 2, and before the first cut was woven I was told that the mill had a loom running in this small mill on the same style on seven shuttles, and I told them that I would like to see the cut of cloth after it was finished. I knew that if it was not as good as what we had been making at our mill that I would not see it unless I asked the cloth examiner to send for me when that cut came through. He got word to me while the boss weaver and superintendent were at the perch examining the piece and the result was that it went into a second. I told them I thought if they would look in some other department they would find where the trouble was, that the yarn was uneven when it came from the spinning room and the twist was uneven when it came from the twister, and that it was impossible to get a perfect piece of cloth under these conditions. But they did not attempt to remedy the difficulty. Some days they would have six or seven cuts of this particular style to show me. nothing wrong only uneven. We were running on twenty or thirty different styles in the mill at the time, but this style with the lemon and black twist was the only one that caused any trouble.

I had done all I could and having so much to look after in the different weaving rooms I made up my mind that I would not go to the finishing room again. The next day I was sent for and I asked the cloth examiner if it was the same style and he said it was. I then told him to say that I would not go down to look at any more pieces of that style. The agent's attention was called to the matter the next day and he was told that we were making all seconds in the weave room and that I refused to go to the finishing room to look at the imperfections. The agent sent for me to come to the finishing room when they had six or seven cuts of this style to examine. He said, "I understand you are making all seconds on one particular style in the weave room and that you refuse to come to see any more pieces.' I stated the case to him and that I had absolutely refused to look at any more pieces, but I would look at one if he would stay and examine it with me. He did so, and the superintendent, agent and myself pulled over several pieces and when we came to each rowy place, I called his attention to it.

After we had examined the cloth I told him what I had done to overcome the trouble and asked him if he knew of anything that could be done which I had not tried, as I was as anxious as anyone to have those goods come as the other styles were coming

and that I knew from what I had done that it was not the fault of the weaving. The agent said he knew it was not, and told the superintendent to go into the other departments and locate the trouble and the goods would come in better shape. I asked him if he would come to a certain department with me and have the superintendent come also, as I wanted to show him something which would interest them. Before I did this I told him I did not wish him to think for a moment that I was reflecting in any way on the management of the overseer of the department we were going into, but that it might have been an oversight on his part that he did not see this machine was out of order. We went to the twisting room and stood far enough away from a twisting machine so that we could see the bands which turn the spindles. I pointed out to him that some of them were tight and others were so slack that they were running out of the spindle. We went to the machine and stopped it, took off a bobbin from the spindle that had a tight band and also a bobbin from the spindle that had a slack band. That was where most of the trouble originated, although the yarn was uneven coming to the machine. I left them to talk the matter over among themselves and went to the weaving department.

They had the machines stopped and new bands put on where they were required. I got orders to weave no more of the twist on hand, but to stop the looms until the new came along. We had no trouble with the goods from that day until the order was filled; no more than generally comes up in any mill.

---

The sales of British-made cotton cloth in the United States amounted to 46,085,998 yards, worth $6,607,795 in 1910, against 61,451,676 yards, worth $8,645,006 in 1909.

The imports of cotton into France during 1910 amounted to 276,759 tons, valued at $75,573,000, against 332,678 tons, valued at $88,583,000 in 1909. Of the quantity imported in 1910, the United States supplied 191,590 tons, British India 40,274 tons, Egypt 24,942 tons, the remainder coming from other countries.

## WHY SILKS ARE WEIGHTED.

*BY DAVID DENIER.*

Silk as obtained from the cocoon contains about 25 per cent. of gum. One pound before boiling off weighs 12 ounces after boiling off. Souple silk has a certain amount of gum remaining in it. This gum destroys the lustre, producing the souple effect. The 12 ounces of silk is then weighted, bringing it in some cases to 48 ounces, and is used as filling. Fortunately not much souple filling is being used at the present time, but the defects caused by weighting are encountered in silks weighted to 16 ounces. Anyone who has ever had anything to do with the weaving of skein dyed silk knows how hard it is to weave pure dyed stock (12 to 14 ounces), owing to its tendency to mat up or form buttons behind the rods, harness and reed. To overcome this matting up manufacturers have dyed their silk to 16 or 18 ounces or thereabouts, and the goods have been accepted as pure dye.

The faults of overweighting can be traced past the wholesale dealer, the jobber and the retail dealer to the woman who demands a silk fabric at 29 cents or 39 cents per yard, and expects to get serviceable goods at that price. Samples of his competitors' goods are frequently submitted to the manufacturer with prices lower than he can sell his goods for without a loss. The manufacturer counts the ends and picks, guesses how much the goods have been weighted in dyeing and proceeds to figure. Adding a few ounces to his guess on weighting he finds he is still too high, so a few more ounces are added, and a few ends and picks dropped out, until he gets a "silk" cloth with which he can undersell his competitor. It masquerades as silk, but it is not in the possession of the weaver very long until it passes into the class of "ribbons" and then becomes rags. Several years ago some of the manufacturers put out good silks with the words "Warranted," "Guaranteed," etc., woven into the selvage. In a short space of time these words meant nothing, competing manufacturers having been forced to overweight their products and use the same marks in order to keep their mills running. This is the most serious difficulty in the silk trade today.

## THE PRACTICAL USE OF CONCRETE CONSTRUCTION FOR TEXTILE MILLS.

*BY FRED S. HINDS, Mill Engineer.*

This article will embrace fifteen leading advantages showing the practicability of reinforced concrete construction for textile mills.

In textile manufacturing the growth has been slower than in other lines of manufacturing. Throughout the whole country warehouses, factory buildings and office buildings have been erected entirely in reinforced concrete.

There are about fifteen mills in this country built entirely in reinforced concrete and these are for the manufacture of cotton, woolen and knit goods.

The writer has communicated with most of these mills, putting a few pointed questions, such as, "would you build again in concrete," and the answer in all cases was in the affirmative.

This is conclusive that we are far beyond the experimental stage and that the textile manufacturers are now seeing the advantages of this type of construction.

The great resistance of reinforced concrete to the vibration resulting from high speed machinery is due to the fact that all its members are cast into a monolith or one huge concrete stone with openings for stories and windows. The rapidity of construction in reinforced concrete gives it a large commercial value.

First: Its strength and rigidity of construction on account of its monolithic form gives great stiffness in its floor beams, whereas the quality of hard pine timber is constantly deteriorating and does not give the stiff floors as formerly.

Again all columns are braced at junction with floor beams, also at walls, which is an unknown feature in mill construction, except its thick walls bracing the whole structure.

The use of steel I beams in lieu of hard pine beams is only a makeshift to obtain more rigid floors. But these I beams have warped and twisted in fires, where the hard pine plank has only charred.

If these steel I beams are fireproofed, the construction would cost more than concrete construction.

Second: The light load of textile machinery is considerably less than provided for in other lines of manufacturing buildings.

For the manufacture of light machinery 125 lbs. per square foot is the assumed live or applied load. The distributed live load of cotton machinery is from 35 lbs. per square foot in the picking and carding room to 25 lbs. in the spinning rooms. Double this for vibration and we have 70 and 50 lbs. respectively; but the common law of mechanical engineers is to add only 50 per cent. of load for vibration. These loads are taken from a detailed table of weights of machinery, shafting, stock in progress and employes, in fact, everything on the floors and ceilings as compiled by the late Mr. Edward Atkinson of the Boston Mfg. Mutual Fire Ins. Co.

Thus the live load in a cotton mill cannot exceed 70 lbs. per square foot for one floor, and 50 lbs. per square foot for the remaining floors, or both at highest maximum load.

The supporting load of concrete floor slabs is directly proportionate to the live load, but the thinnest practical slab to construct, viz, 3 in. thick, will support a live load of 100 lbs. per square foot, and easily.

Some readers will answer that the large hard pine timbers will carry more than the above loads. This may be true, but they are increased to these large sizes only to obtain stiffness.

Here is just where concrete comes in, as the very nature of its structural materials is to insure the greatest stiffness. Under heavy load tests, reinforced concrete shows very slight deflection in beams, and practically none in floor slabs, or so slight that all give very level floors.

Again all computations are based on green or wet concrete, and in six months, as proven by actual test, is from 30 to 50 per cent. stronger.

Therefore, with these very light loads, it is possible to construct concrete columns that are properly reinforced, at a much smaller diameter or size than is usual in factory buildings.

In these factories the loads are heavier or not as well distributed as in the common practice of locating machinery in textile mills.

Third. Another most important reason is the fact that the cost of fire insurance on the buildings can be considerably reduced, as the fire insurance companies are now appreciating the fireproof qualities of concrete for housing the ever increasing value of machinery and stock in progress.

However, these valuable contents must be protected even in fireproof mills by sprinklers and the regular fire protection system. The lower rate of insurance may not seem large enough to warrant erecting a concrete building, but everything must be saved in maintenance to apply to the dividend power of the mill.

This class of building erected adjacent to existing building reduces the cost of insurance for the whole plant, and can readily be veneered with brick on the outside to conform to present buildings.

The Boston Factory Mutual Fire Insurance Company's latest publications on Standard Mill Construction gives the following illustrations in support of Reinforced Concrete.

First in order comes a large industrial plant built entirely in reinforced concrete comprising several large buildings and a large one-story building with sawtooth skylights, also stairways built in concrete.

Next, an illustration of steel floor beams used as a substitute for hard pine beams supporting heavy floor plank. This had been through a fire, and the result was that the I beams were twisted out of shape and the plank charred.

These steel beams were not fireproofed. Had they been incased with a concrete slab for the floor they would have been fireproof construction, but this class of construction would cost more than regular reinforced concrete, because of the fact that no I beams are used, only truss rods or bars incased in the concrete.

And further, a machine shop illustrated in steel construction which had been destroyed by fire and the whole structure was in a heap of twisted steel and fallen masonry.

Innumerable examples can be cited that concrete constructed factories have passed through fires and have remained practically intact.

The above three examples should appeal to the sound business judgment of the textile manufacturer and business man about to build a factory or to extend an existing one.

Some readers will say that the extension of a mill in concrete or a new concrete mill in the same mill yard will not harmonize with the existing brick mill. The answer to this would be to veneer the concrete walls with red brick. The old method of veneering buildings with brick or other material is greatly improved upon because of the fact that small anchors or ties to hold the brick are built into the concrete and after the concrete is set they become very strong. These would be turned up in the mould and then after the forms are removed, painted down as anchors in the brick joints. Again Portland cement is so cheap that brick work for mills is being laid up with cement mortar, therefore the mortar is stronger than formerly, where only Rosendale cement was used.

Fourth. The subject of waste and greater production of goods is the constant study of the manufacturer. The management of all textile mills is ambitious to decrease the waste both of stock and mechanical equipment, and to increase the production of goods. This can be accomplished both ways with a greater steadiness in the running of machinery and power. This is possible, as can readily be perceived from the fact that with rigid and smooth, level floors, the machinery will run more steadily than if set upon plank floors and deflected wood beams.

The writer, when inspecting some English cotton mills, visited a saw-tooth weave shed with looms standing on flag stone. Being struck with the high speed of the looms they were at once counted and found them running 224 picks per minute. These were 36 and 40-inch looms. It is often asked how the English can make such good yarn out of poorer cotton than in America. Is the ques-

tion not partly answered when it is understood that all their mills are fireproof, some with concrete floors and granolithic Portland cement top and some have smooth flag stone laid on brick arches?

A small weave room in this country was moved from a mill constructed building with plank floors into a concrete building and the manager was able to increase the speed of the looms to a much higher figure than was ever possible under the old conditions.

Fifth. The largest percentage of increase in window area for the admission of daylight, making it particularly adaptable to wide mills.

This becomes possible as the concrete pilasters, forming the exterior walls, are designed not much larger than the interior columns of first story.

Also by the square head windows which run up so high that they form a part of the floor slab, the high light thus increased adding to the efficiency. Mills 125 ft. wide would be better lighted than brick mills 100 ft. wide.

Sixth. The rapidity of construction gives it a high financial value in completing the building earlier than any other type of construction. There is no delay contingent upon slow delivery of materials, such as hard pine timbers, which on large orders of 16-inch timbers, are in the tree when ordered. We learned of a plant recently where the roofs were delayed 30 days waiting for rafters.

When working with concrete, it is a common thing, after the foundations are completed, to run up a story every ten working days, using the same concrete forms over and over as the structure rises on the foundations. Work can be commenced promptly; cement, sand, broken stone, form lumber and steel bars are shipped straight, in most cases, and then bent to the desired shape at the building. It usually takes six months to build an average sized four-story mill and have it ready for the machinery. A mill in concrete can be built and made ready for the machinery in five months.

As an example, a factory in Brooklyn, N. Y., was built in just four months. This factory was very similar to mill construction. The size of this building was 75 by 600 ft. and six stories high.

Seventh. Heat resisting qualities, thus cooler in summer and lends to results desired for humidifying. It is a well known fact that all stone buildings are cooler in summer. Reinforced concrete is very dense and on account of the very fine stone that is used and small amount in proportion to cement and sand. These ingredients reduce the amount of voids to a minimum.

This feature will assist the textile manufacturer in keeping the humidity in some of the departments where it is most desired and also in keeping the building cooler in summer to reduce the temperature of high speed machinery and electric motors and to eliminate as much electricity from the atmosphere as it is possible.

The following test of this fireproof material made by Prof. Woolson of Columbia University illustrates the heat resisting qualities:

A test building of concrete, 18 by 20 ft., was subjected to a test of 1900° F. for 20 hours, or about four hours to each test, there being five tests. The interior of the walls of the chimney flues, which were four inches thick, after the test were found as smooth as they were when first built and would be good for another test of 100 hours, if it was necessary to give it this time.

When tearing down a similar building, after 28 hours of fire test at the high temperatures mentioned above, it was found that the heat had not penetrated the concrete sufficiently to burn pieces of coal only two inches beneath the surface of the concrete. Herein lies the great value of concrete as a fire resisting material and surely one which demonstrates that it is a poor conductor of heat.

Many tests of steel imbedded in concrete have demonstrated that the face of a piece of concrete may be heated to a high temperature for two or three hours, but the bars placed two inches beneath the surface would obtain a heat that would be dangerous to their structural strength.

(To be continued.)

## CROSSED WARP EFFECTS: AND SOME METHODS OF OBTAINING THEM.

*BY W. W. MARLAND.*

(From the Journal of the Manchester Textile Society.)

Crossed warp effects mean any effects which are produced in cloth by crossing ends in the shedding process. The most common effect is the leno, of which there is a large bulk business done in Manchester. There are various methods of obtaining the crossed

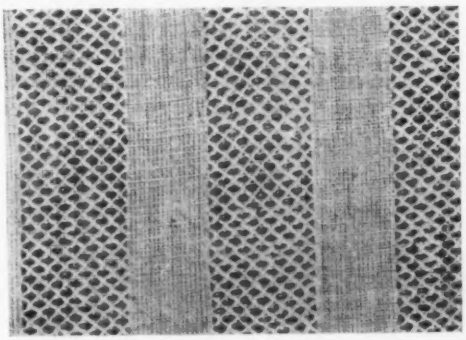


FIG. 1.

shed necessary for the manufacture of this cloth. The most common method is by means of the doup, but the crossed shed can also be formed by the leno reed, or by means

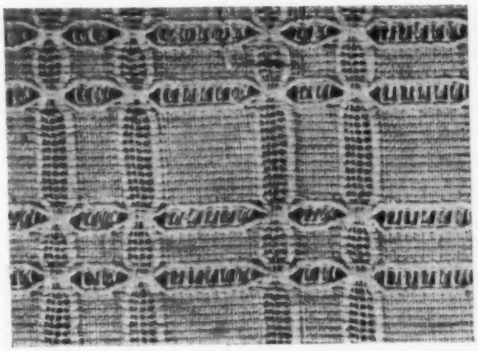


FIG. 3.

of a bead, while all manner of fancy crossings can be made by means of the lappet loom. I do not intend to go into the details of lappet weaving, but shall confine myself mostly to the doup method, and shall try and make the account as practical as possible.

I have here a doup made from wire, which, I am given to understand, is being largely used on the Continent, though I do not think it has made much headway in England as yet. The doup used in England is made from worsted, varying in thickness according to the work it has to do.

The cloth shown at Fig. 1 is an ordinary net cloth, made from one doup, four ground staves, three back standards and one slackener, giving a total of ten hooks in the dobby. This cloth, as it stands, could not be made with a bead, but if we substituted

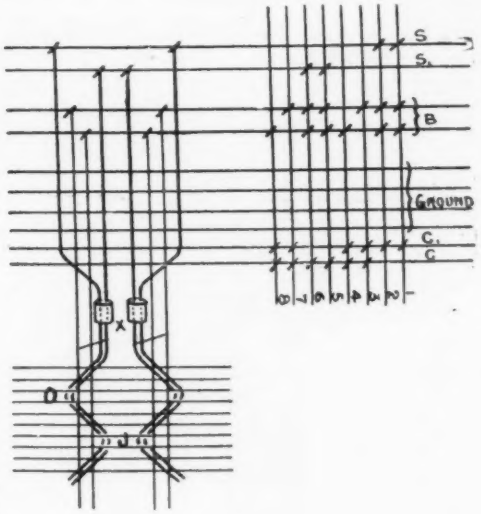



FIG. 2

each single lace thread by two fine ends, we could have made the cloth without a doup.

Fig. 2 shows how this can be done. This figure gives the draft and lifting plan for a "two up, two down, two up, two down," or eight to the round net.

SS, two slackeners, one for each end through the bead; B, two staves for the backing threads, just as in the ordinary leno; G, ground staves; C, C1, crossing staves; X, bead.

The principle of this method is that when the shaft, C, is down and $C^1$ lifted, the bead is pulled down, both ends going down and

being bound into the cloth on the inside. When $C^1$ is down and C lifted, both the threads are bound down on the outside, as at O. It is essential in this method of mak-

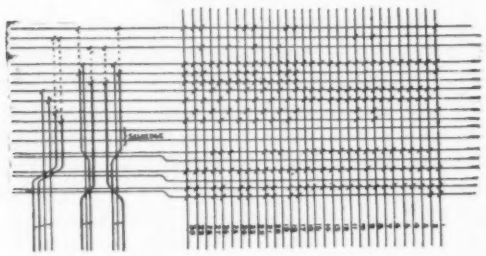


FIG. 4.

ing nets, to have two net threads crossing over the backing ends.

I will now pass over ordinary doup work,

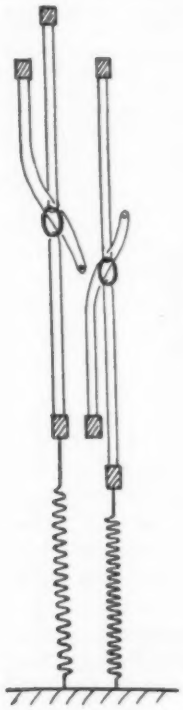


FIG. 5.

and explain how to cross a net thread over a leno backing, such as is shown in the cloth illustrated at Fig. 3. The object of the leno backing is to make a very clean and open lace effect; the ordinary backing threads would run together in the middle, and make an untidy cloth. Fig. 4 shows the draft and lifting plan for a portion of the cloth. The cloth requires three doups, two selvage staves, one back standard for the thick cord end, four back standards for the leno ground, two back standards for the leno vein, and three slackeners, making 18 hooks in the dobby.

In this leno crossing leno, it is essential to have the coarse thread doup in front of the vein leno doup, and not the vein leno doup in front of the net doup, as some text books have it. One may be tempted to ask,

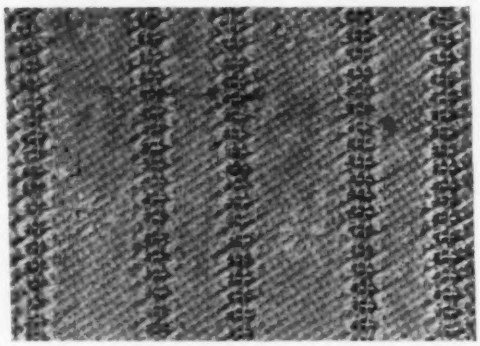


FIG. 6.

"What sort of yarn should be used for all this complicated leno work?" The yarn in the cloth under consideration is a good carded Egyptian twist, which is well sized, but not made stiff, or it will saw the doups to pieces. Some will ask: "Why is it a top doup instead of a bottom doup, and which is the better and more economical?" My answer is, a weaver can see what sort of cloth she is making by weaving the cloth the right side up, but there is more strain on the doup, and consequently more breakages; but these are more easily repaired with a top than with a bottom doup.

Fig. 5 shows why there is more strain. In the open shed the slip half slides through the eye of the standard heald, and this heald is at a high tension when lifted against the spring, thus the slip half cannot work freely, and so is sooner rubbed to pieces.

(To be continued.)

# Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

## ARTIFICIAL TULLE.

*BY ROBERT DANTZER.*

(Translated from the French by the Editor of the Textile World Record.)

In 1734 Reaumur, a distinguished naturalist, predicted with astonishing accuracy the manufacture of artificial silk. He also predicted at the same time the possibility of

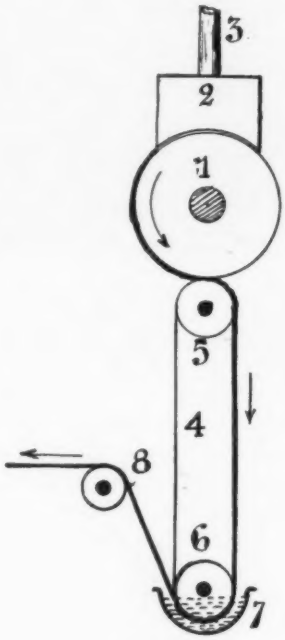



FIG. 1.

manufacturing cloths without weaving them. The first prediction has been realized and it looks as if the second would also become a reality, at least in part. While these pseudo-fabrics have not yet been produced, artificial tulle is made in a satisfactory form and when we consider how recently the artificial silk industry has been developed and the difficulties encountered at the start, we are inclined to accept the idea that artificial fabrics will eventually be manufactured. The manufacture of fabrics by moulding collodion has engaged the attention of many investigators, but the results do not seem to have equaled those by the Societe de Cellulose, Frenoy le Grand. While it is difficult to obtain the information regarding the process of manufacturing, M. A. Chapelet has given an account of the industry in a recent issue of "La Nature." Fig. 1 illustrates the principle of the machine described by M. Chapelet.

The tulle is moulded by means of a metal roller, 1, of which the surface is engraved with fine intersecting lines. This roller revolves in a receptacle, 2, containing the solution which has been supplied by a pipe, 3. The depressions in the roller become filled with the mixture. The surplus solution clinging to the roller is removed by a scraper, leaving the mixture in the depres-

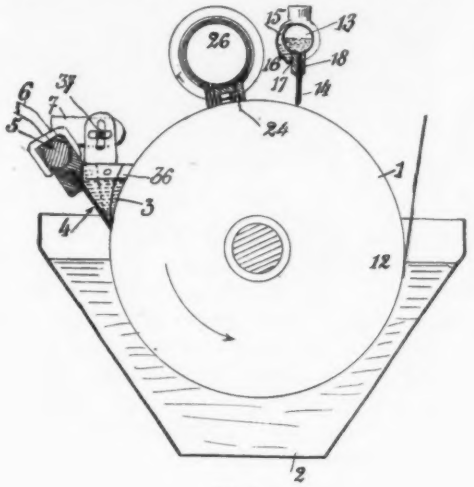



FIG. 2.

sions only. The roller, 1, revolves in contact with an endless apron, 4, carried by the rollers, 5 and 6. By reason of the pressure of the roller on the apron the cellulose solution is drawn from the roller and adheres to the apron. At this stage of the process the tulle is extremely fragile, but gains a certain strength by reason of the evaporation of the moisture in the solution. It is solidified by immersion in the coagulating solution, 7.

The various solutions for fixing the cellulose, denitrating it, or rendering it incombustible, do not differ materially from those employed in the manufacture of artificial silk.

The tulle is finally stripped from the apron and passes over the roller, 8, after which it is colored or passed through a bath to increase the solidity. While this machine conveys an idea of the principle of moulding artificial tulle, it nevertheless leaves much to be explained. It is difficult to understand the

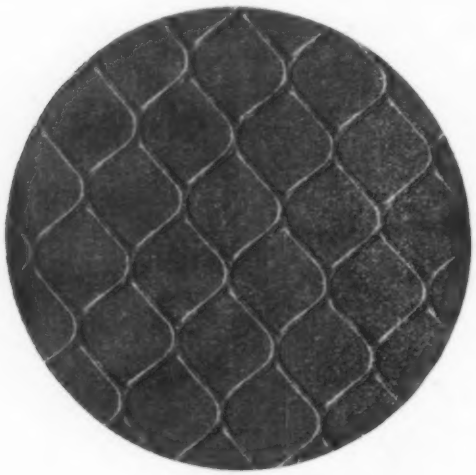


FIG. 3.

reason for delivering the material from the engraved roller, 1, to the apron, 4. M. Chapelet states "that it is difficult to obtain good results at this stage of the operation, the nature of the receiving surface playing a certain role in stretching the tulle from the roller without tearing it. It is necessary to exercise great care in starting the machine and to maintain the proper conditions of viscosity and temperature."

The serious defect of this arrangement arises from the great distance between the moulding roller and coagulating bath. A financial prospectus of the artificial tulle enterprise states that the apparatus consists of a metal roller on which is engraved the design to be produced. "A cupro-ammonical solution runs on this roller and is moulded into the engraved design. The cylinder revolves and delivers the material to a coagulating bath which solidifies it and makes it artificial tulle."

These general remarks enabled me to find the patent for the process, which was invented by M. A. Baj. The machine is illustrated at Fig. 2. The engraved roller, 1, revolves in the tank, 2, containing the cellulose solution. This tank is large enough so that the surplus dripping from the scrapers is returned without coming in contact with the

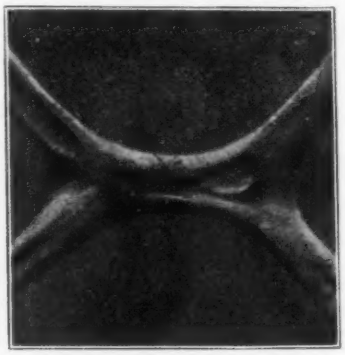


FIG. 4.

rollers. The material to be moulded is held in the receptacle, 3, and applied to the cylinder slightly above the level of the coagulating liquor. The exterior of the receptacle, 3, consists of a scraper, 4, oscillating on a shaft, 5, and pressed against the cylinder by the weights, 6. The two ends of the recep-

FIG. 5.

tacle, 3, are movable and held in position by the plates, 7, to suit the width of the engraved roller. The scraper, 4, is vibrated lengthways in order to spread the material evenly on the roller. The roller, 1, revolves in the direction indicated by the arrow. The engraved parts are filled with the cellulose solution which is hardened when passing through the liquor in the tank, 2. The cellulose sheet is detached from the roller at 12 and the surface of the roller is then washed in running water or by other suitable means. This rinsing liquor is delivered by the hori-

zontal perforated pipe, 13. The liquor strikes the cover, 16, and reaches the engraved roller by running down over a flexible band, 14. After dissolving the cellulose adhering to the cylinder, the rinsing liquor is sucked through the opening, 24, into the pump, 26.

guish it from the genuine tulle when seen at a distance. As far as combustibility is concerned the artificial is somewhat inferior to the genuine. A large production of the artificial tulle can be obtained from a machine and the design can be changed by changing the engraved roller. As a result the cost of

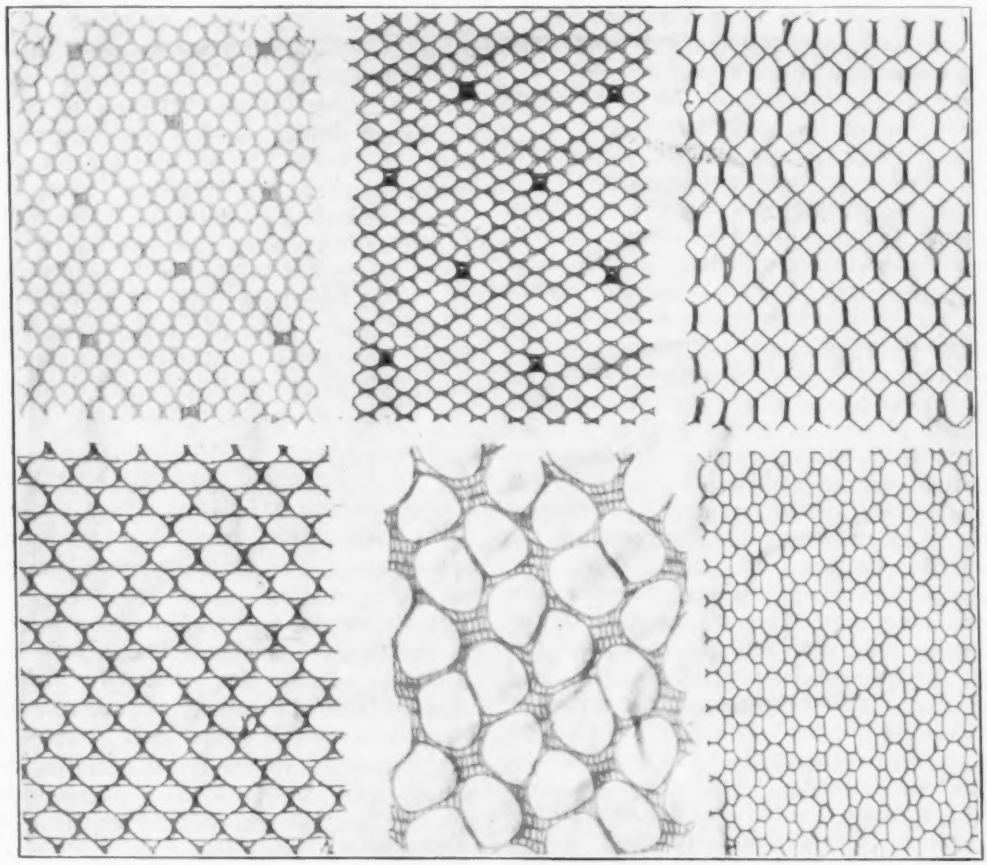


FIG. 6.

The advantages and objections to artificial tulle may be summarized as follows: To begin with, artificial tulle contains no finishing material and is, therefore, homogeneous and unchangeable by ordinary use, whereas ordinary tulle deteriorates when stored. Immersed in water and then dried it remains as flexible and solid as before. I have boiled the artificial tulle for two hours in a solution of soap and found that it was not injured. When placed on a hat it is difficult to distinthe artificial product is very low, enabling it to be sold at a low price. The production of one machine is about 550 yards per day, and one operator can attend to several machines. The artificial product can be produced at one-quarter of the cost of the genuine tulle, which requires very expensive material. While the process is very ingenious and the results obtained satisfactory, the artificial fabrics have but a restricted use. It is impossible to produce fabrics with a close set

such as can be made by weaving, because the artificial threads if brought too close together become amalgamated into one mass, making a product like felt or paper.

The samples I have examined have been so small that it is impossible to state that the artificial tulle can be manufactured free from imperfections or serious irregularities. It will be readily understood, however, that the uniformity of the artificial tulle depends upon the cleaning of the engraved cylinder. The slightest impurity left on the cylinder will cause a defect in the product at regular intervals. Fig. 3 shows the artificial fabric as seen through a magnifying glass, while Fig. 4 is a microscopic view of the same sample. These views show the side of the tulle which comes next to the cylinder. Each filament of the net work shows a channel caused by the air becoming imprisoned between the engraved cylinders and the paste applied to it. This defect is also seen occasionally at the intersection of the filaments. A section of the filament is shown at Fig. 5. The rounded side having been moulded in the engraved cylinder and the flat side having been formed by the scraper. The rounded side is sometimes made to resemble the twisted appearance of genuine tulle. The back of the artificial product presents a plain surface entirely different from that of the genuine tulle, which is the same on both sides. The artificial product also possesses less strength than the genuine. It is evident from what has been said that the problem involved in synthetic tulle has not yet been completely solved. Nevertheless it is interesting to know that the artificial material has already been applied to a number of uses. Fig. 6 shows samples of the artificial tulle which can be seen at our Boston office.

## CORRECTION.

In our April issue in reporting the meeting of the National Association of Cotton Manufacturers, we stated that T. B. Summerlin, who received the students' medal from the Association, was a graduate of the Lowell Textile School. This is an error as Mr. Summerlin is a graduate of the Textile Department of the North Carolina College of Agriculture and Mechanic Arts.

## MITCHELINE AND SATIN QUILTS.

*Editor Textile World Record:*

I was much interested in an article published some time ago in your journal on the manufacture of mitcheline or satin quilts. The writer was correct in stating that these goods were manufactured mainly in Bolton, Eng. He also refers to "this fabric the name of which bears no relation to the weave employed." Names are given to fabrics from various motives and in many cases do not denote or suggest the weave. Some names are nothing more than brands; others take the name of the place in which a particular construction originates; some are named according to the weave; but in this particular instance the name is taken from the inventor. Mercerization is named after Mercer of Blackburn, Eng., because he discovered that process of treating the cotton fiber. Mitchell invented the combination of weaves and mechanism to produce what was first known as the Micheline quilt. In his productions he used a combination of coarse and fine filling, one pick of each alternately. He received a royalty from one of the best firms, and practically the only firm engaged at that time in this special trade and operating in Bolton, Eng.

This firm afterwards adopted the system of inserting two picks of coarse yarn and two picks of fine yarn alternately, thereby evading Mitchell's patent. A law suit followed, but was lost by Mitchell. Nevertheless the fabric and manner of operating the weaves is practically the same as devised by Mitchell, and on that account the name of "Mitcheline" is more applicable to this special fabric than even "satin," for when you come right down to facts there is no satin weave used, but two plain weaves of widely different construction are interwoven in such a manner that each displays its own characteristics of plain woven ground, and plain woven figure, combined with a slack and tight warp, and fine and coarse filling, producing most pronounced and effective designs.

Yours very truly,

Joseph Hargreaves.

## A COMPARATIVE TRIAL BALANCE FOR A TEXTILE MILL.

*BY SAGINAW.*

(Continued from April.)

From the first sheet, or condensed trial balance, we obtain a good idea of what stock there is on hand on Jan. 31, 1911, and can compare these figures with January, 1910. We can see whether our liabilities have increased materially during the course of the year and whether they are sufficiently protected. Whether the fixed assets are comparable depends on the depreciation allowed on plant and building. If the depreciation written off is inadequate there results a double error: (1) incorrect comparisons, (2) a false profit and loss showing at the foot of the sheet. Allowance for bad or doubtful debts should not be overlooked.

Sheets, A and B, are arranged as follows: The first column gives the net postings to the numbered accounts for the month of January alone; column, 2, is a copy of last year's column, 1, and has been filled in before January 31. Column, 3, is the actual balance of the ledger accounts and the figures and constitute a part of the trial balance of Jan. 31, 1911, itself. When totaled and recapitulated they are carried forward to the condensed trial balance sheet as shown. Column, 4, is a copy of last year's column, 3, and is likewise filled in before the end of the month.

The balance being drawn off directly on to these sheets in the usual manner, as also the expenses or income for the single month of January are inserted in column, 1, we are enabled to view and compare the single month for both 1910 and 1911 and at the same time the five months ending January 31 for both years. By deducting the expense from the income we obtain the amount of excess income, in our particular case as shown on sheet, B, columns, 2 and 3. This figure in turn requires adjusting for the difference in stock. If, during the month the stock has increased, the balance of the adjustment account will be a credit one and the figures will be written in black. They are therefor added to the excess income. When it happens that the stock has decreased there will be a debit balance to be written in red ink for the adjustment account, and the difference between the black and red figures will appear as either a gain or loss for the month. Again, when the expenses exceed the income, the excess expense should be expressed in red figures and the stock adjustment figures handled as above indicated. A final remainder in red is a loss and one in black is a gain or profit for the month. Finally all red figures are transferred to the debit side of the condensed balance sheet from sheet, B, and black figures transferred to the credit side. Of course there is no necessity for red figures on the condensed balance sheet due to the Dr. and Cr. columns which are absent on A and B, and all the figures are black on the former.

The five months' result can be shown directly on the condensed balance by the difference between the totals appearing under the headings "expense" and "income." For the year 1911 there is $116,000 to be deducted from $129,500 income, which results in the showing of $13,500 profit at the foot of the sheet. The results for 1910 were reached in the same manner a year ago and are merely copied with the rest previous to the end of the month.

The only assets and liabilities not shown under a separate heading are the "contingent" ones. These being of an uncertain nature must be included under the heading where they temporarily belong. There should be a few blank lines left at the foot of each subdivision of the balance sheet wherein new or temporary accounts may find a place when needed. A "suspense" account may be either a contingent asset or a liability and its place on the sheet depends on its nature. Discounting a customer's note involves a contingent liability and should be treated on the books, and at the time of discount, so as to leave the notes or bills receivable intact and a "discounted bills payable" account credited while cash is debited. A current liability has in this case been created.

Neither the accounts receivable or payable need appear itemized in a trial balance where they should be merely controlling ac-

counts. The receivables constitute a separate ledger and the payables are usually vouchered. Both the auxiliary ledger and the unpaid vouchers on file should be checked with the main ledger balances every month. By studying the accompanying form it is easy to distinguish between assets and expenses, although much has been written on the subject and, no doubt, there are times when a decision either way is perplexing. Broadly, the first named involve only such items as are represented by property, holdings of all kinds embracing proprietorship, goods, materials, supplies, cash and cash advances all, or any, of which may stand for a permanent or temporary value to a going concern. Expenses represent consumption and necessary upkeep plus decay, all three of which are intended to be recovered from a future income, whereas a profit is expected on the investment made which the income must also be made to take care of.

A production report at the foot of sheet B is advisable as it is an aid to the interpretation of the conditions found. It should include at least the number of yards dressed, woven, finished, shipped and on hand.

By subdividing the expense accounts as shown, each department is charged with what belongs to it, and care should be taken that the various charges are correctly made. For example if a special discount has been allowed a customer due to weak salesmanship, it is proper that "selling expense" be charged therewith; if due to special instructions from the executive department, "general expense" may be charged. Again, claims for imperfections, being as they are, unfortunately, more or less customary, are usually a charge against "general expense," but they also may at times become chargeable to "selling." If the manufacturing end is to blame for a heavy claim made against goods over and above the strings allowed, account No. 69, it is reasonable to expect the mill expense to bear the brunt of the charge.

In conclusion it may be added that if two sheets, 8 1/2 by 11 inches, cannot accommodate the necessary accounts, they can be of a larger size, or sheets A and B can be printed to contain only the expense accounts with recapitulations on sheet, B, and a third sheet, C, made to carry the income, adjustment, profit and loss and production figures. All the figures given in the illustration are, of course, fictitious and intended merely to help the explanation of the text of the present article.

## A SILK WEAVING MILL.

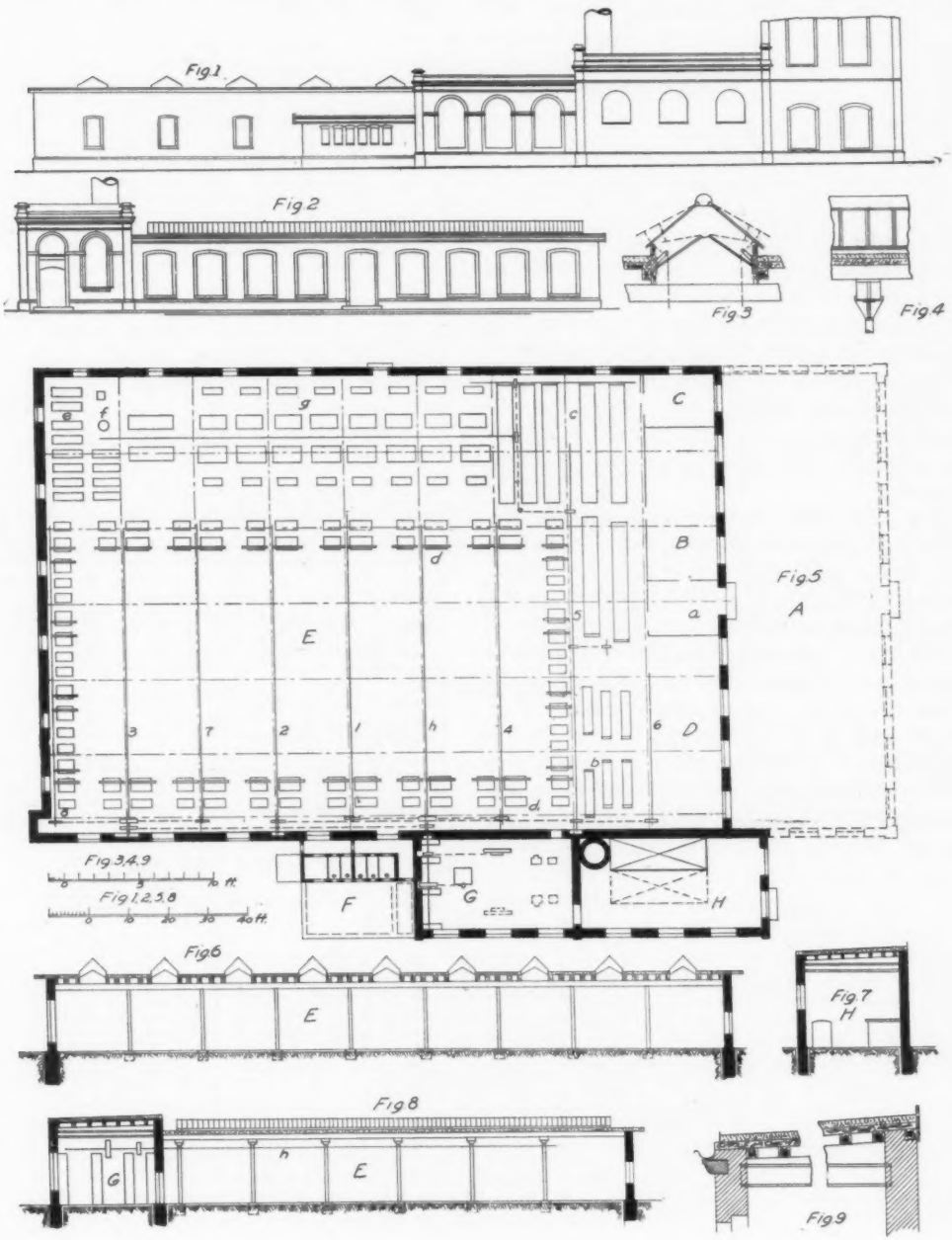
*From Uhlands Technische Rundschau.*

(Translated from the German by the Editor of the Textile World Record.)

The accompanying drawing is a plan of a 120 loom silk weaving mill built at Goerwihl, Baden, by Ferdinand Mayer. The portion in dotted lines at the right of Fig. 5 shows how the plant can be easily enlarged if required. The warp preparation department has been planned to provide not only for the 120 silk looms in the mill, but also for a large production by house weavers, many of whom are found in this section of Germany.

As shown in the plans, the building is one story with monitor roof. In a rectangular annex are located the boiler house, H, and the power house, G. The entrance to the mill is through the vestibule, a, adjoining which is the shipping room, B. Beyond the shipping room is a private office, C, from which the interior of the shipping room can be easily watched. The yarn is taken to the room, D, from which it is delivered to the 6 spoolers, b, in the adjoining room. The 7 winding machines, c, have ample capacity for both the looms in the mill and the house weavers. Next to the winding machines are 16 warpers, g, also the same number of spoolers. The warps wound from the machines, g, are next taken to the drawing-in and twisting-on frames, e and f. Plenty of room is allowed between the warping department and the looms for the storage of the beams. The weave room, A, is high and very light, and accommodates 112 looms for medium width goods. The looms are arranged in 8 rows of 14 looms each. Each bay accommodates 4 looms. The space between posts is 18 ft., 5 in. in length by 17 ft., 9 in. in width. The roof beams are 15 ft., 1 in. above the floor. Each loom has a floor space of 81 sq.

ft. The boiler house has one boiler with a heating surface of 322 sq. ft. There is room for another boiler if required. There is one engine of 80 h. p. in the power house, driving the mill shafting and the dynamo. The power is transmitted to the main shaft by a belt, as shown in the ground plan, Fig. 5. The power is carried to the counter shafts



by rope transmission, as shown at Fig. 5. The machinery has been so arranged as to require as little transportation of the material as possible and the arrangement of the shafting results in a very small loss of power.

## MILL ORGANIZATION.

*BY J. CROMPTON.*

From the Journal of the Manchester Textile Society.

(Continued from February.)

In order to demonstrate the utility of a comprehensive system of properly-tabulated daily and weekly records, whereby the position of certain designs or special orders may be reported, I now propose to trace certain methods applicable to the manufacture of colored goods, which I trust may prove of value as suggestive lines on which almost any kind of cloth manufacture may be conducted.

The first item, therefore, should be the entry into the order book which is shown at Fig. 2, the cloth number in which refers to certain particulars of counts, reed, etc., duly recorded under that number at Fig. 3.

The manufacturer's first business was, of course, to calculate at what price he could make the cloth and to cover himself with yarns, and quote accordingly. If no stock warps are kept on hand for that particular cloth, then a special order will have to be despatched to the spinner, or if a stock design, the list, Fig. 4, will have to be consulted in order to ascertain if the order is fully covered, and whether it is advisable to further supplement the stock of those particular warps.

The manner of writing out the spinner's order for ball warps is shown at Fig. 5, but, of course, colored goods are also largely made from yarn bleached, dyed and sized in the hank and the pattern formed on the sectional warping frame. For this purpose it is usually the practice to keep a supply of dyed

FIG. 10. DRAWERS-IN BOOK

| Cloth | Cuts | Patt | Pro | Ends |
|---|---|---|---|---|
| x 70 | 10 | 60 | 604 | 3393 |
| 406 | 6 | 10 | 645 | 3206 |
| 406 | 6 | 10 | 646 | 3206 |
| 406 | 10 | 12 | 647 | 3180 |
| 406 | 10 | 12 | 648 | 3180 |
| x 70 | 10 | 60 | 664 | 3393 |
| x 70 | 10 | 60 | 665 | 3393 |
| | | | | 22951 |

23000 Ends at 8d per 1000 = 15/4

| Cloth | Ends | Cuts | Length | Patt | Pro | Hanks |
|---|---|---|---|---|---|---|
| x 70 | 3393 | 10 | 1000 | 60 | 604 | 4039 |
| 406 | 3206 | 6 | 540 | 10 | 645 | 2061 |
| 406 | 3206 | 6 | 540 | 10 | 646 | 2061 |
| 406 | 3180 | 10 | 900 | 12 | 647 | 3407 |
| 406 | 3180 | 10 | 900 | 12 | 648 | 3407 |
| x 70 | 3393 | 10 | 1000 | 60 | 664 | 4039 |
| x 70 | 3393 | 10 | 1000 | 60 | 665 | 4039 |
| | | | | | | 23053 |

23000 hanks @ 10d per 1000 = 19/2

FIG. 11. WARPER'S BOOK.

| Date | Order | Width | Cloth | Patt | Pro | Warped | Beamed | Drawed | Cuts | Length of Cuts | Date Put in Loom | Loom N° | 14 | 17 | 18 | 20 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1909 Oct 10 | | 30 | x 70 | 60 | 604 | 1 | | 6 | 10 | 100 | Oct 13 | 98 | | | | | | |
| - 21 | | 30 | x 70 | 64 | 605 | | | | 10 | | | | | | | | | |
| | | 26 | x 69 | 600 | 606 | | | | 10 | | | | | | | | | |
| | | | | 601 | 607 | | | | 10 | | | | | | | | | |
| | | | | 602 | 608 | | | | 10 | | | | | | | | | |

FIG. 12. PROGRESSIVE BOOK.

bundles on hand, a suitable form of stock list being as illustrated at Fig. 6.

This book must be balanced up at least once a week, and from the total bundles of each mark received, must be deducted those used, the balance being in stock. Further yarn must be ordered to stock, according to the judgment of the person responsible, who must be aware what styles of orders are likely to be received. For special orders and outside colors, it is advisable to calculate the exact quantity required and order accordingly.

For these special orders it is also a good plan to take special note of how the yarn runs out, as by this means the degree of waste made from a certain mark of yarn may be checked and due allowance made in future lots. When yarn is given out to wind, it is necessary to enter it in the winder's book, a suitable form of which is illustrated at Fig. 7. The order in which the yarn is given out to wind is, of course, regulated by the urgency of the orders, or by the requirements of the looms becoming empty, for as far as possible, it is advisable to keep each loom on the class of goods for which it is best adapted.

| | × 70 | | | | | | | × 69 | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pattern No | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 600 | 601 | 602 | 603 | 604 | 605 | 606 | 607 | 608 | 609 | 610 | 611 | 612 | 613 | 614 | 615 | 616 | 617 | 618 | 619 | 620 | | |
| Looms | 1 | 4 | | | 1 | | | | | | | | | | | | | | 1 | | | | | | 1 | | | | | |
| Pieces in Looms | 6 | 14 | | | 7 | | | | | | | | | | | | | | 6 | | | | | | 1 | | | | | |
| Pieces on Beams | | | 10 | | | | 10 | | | | | | | | | | | | | | | 10 | | | | | | | | |
| Pieces in Mill | 4 | 6 | | | | | | | | | | | | | | | | | 4 | | | | | | | | | | | |
| Pieces at Warehouse | | 20 | | 10 | | | | | | | | | | | | | | | | | | | | | 9 | 40 | | | | |
| Pieces on Order | | | | | 10 | | | 10 | 10 | 60 | 90 | 10 | 40 | 10 | 10 | 10 | 20 | | | | | | | | | | | | | |

FIG. 10.

| Order | Width | Cloth No | Patt. | Pro | Cuts | Length of Cuts | Date put in Loom | Price per Cut | No of Shuttles | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | ×70 | 60 | 604 | 10 | 100 | Oct. 13. | 3/- | 1 | 14 | 17 | 18 | 20 | 21 | 22 | 24 | 26 | 28 |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

FIG. 14. WEAVERS' LOOM BOOK.

Loom No. 98

Prog. No. 604

Patt. No. 60.

| Date | Cloth No | Weft | Colour | Picks | Heading | No. of Cuts | Yards | Price | |
|---|---|---|---|---|---|---|---|---|---|
| 1909. Oct. 13 | ×70 | 20 | Blue | 15 | 4/4 | 10 | 100 | 3/- | 14, 17, 18, 22 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

FIG. 15. WEAVERS' TALLY BOARD.

It is scarcely necessary to keep a stock list of yarn on bobbins, except for special lots which may have to be put aside for a considerable time. The compilation of a weekly list of looms coming empty is an important matter, as by this means just the kind of warp suited for the loom should be on beams ready to be gaited the minute it is ready for a fresh warp. The form of list which may be used for looms expected empty each day is shown at Fig. 8, where it will be noticed that the number of the loom is put on the line for each day, and underneath its particular description.

This list would, of course, be altered to suit each particular mill, the columns of which in many cases would have to contain particulars of different widths of looms, as well as various kinds of jacquard harness. Although the list of looms falling empty only appears to serve a weekly purpose, yet it can easily be understood that it is very necessary for the manager to have a distinct account of how many looms of each kind are available for different classes of work.

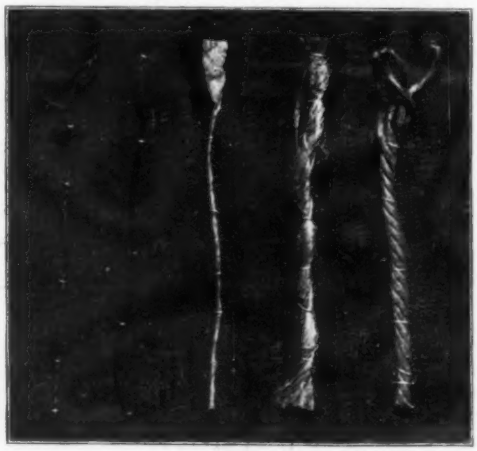
This knowledge is necessary in order to form a basis for any promise of delivery, or to know for what class of goods to seek orders. It is also very advisable that a summary of orders booked should be kept prominently before those concerned. This summary is sometimes known as the "Work List," and may be arranged in such a way as to give an idea of the position and mode of preparing the warps, as represented in Fig. 9. It will be noticed that, besides the total warps on order, this list also shows the number of warps of each kind required for the week, and in the top portion what kinds are actually on beams to meet the fall.

Besides being a basis for promises regarding delivery, this work list must also be consulted in order to be aware of how long orders on hand will find work for the looms, and to be a constant reminder of what classes of work the warpers, slashers, or warp dressers have to prepare for. Whenever any of these respective processes are accomplished, it is important that the fact be duly noted by each person performing such operation. This may be done in small memorandum books, as shown at Fig. 10. It will be noticed that these books also serve the purpose of recording the work done each week, and the basis upon which the wage earned by that particular operative is calculated.

(To be continued.)

## TYING WOOL WITH PAPER YARN.

Our February issue contained a report of an investigation by our French correspondent of the use of paper yarn for tying wool fleeces. At the date of that report he had not obtained the information asked for, but



FIGS. 1, 2, 3, 4, 5.

gave an interesting account of a paper-lined bag used for wool and which was illustrated in that issue. Since then we have received the following additional report from him regarding the twine:

I have continued my inquiries regarding the twine for tying wool fleeces and wrote to J. Urgoite, Bilbao, Spain, who sent me the enclosed samples of twine, Figs. 1, 2, 3 and 4. Fig. 1 is a two-ply paper yarn. Figs. 2 and 3 are samples of single paper yarn. Fig. 4 shows a twine made by twisting paper and jute. I finally found a manufacturer of paper yarn at Roubaix named M. Motte-Bossut, and am sending you a sample, Fig. 5, of the four-ply yarn that he manufactures. The breaking strength of this yarn is about

66 pounds and it measures 387 feet per pound. This yarn is used for tying wool fleeces and also for tying bundles of worsted roving and yarn. It answers well for the latter purpose, as it is smooth and does not leave any fibers in the wool. Gaul.

## AN IMPROVED SHUTTLE.

This shuttle, invented in Switzerland and recently patented in this country, has for its object to strengthen the shuttle body and provide an improved threading device. The inventor states that the improvement consists in forming an aperture in the side of the shuttle body and providing a thread guide, formed of a single piece of metal, having the eye for the thread formed with a downwardly open eyelet and so disposed that said eye lies in the aperture in the body.

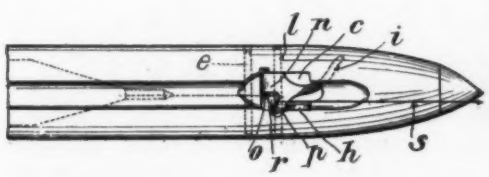



FIG. 1.

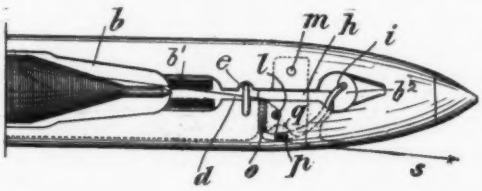



FIG. 2.

Fig. 1 is a side view of the new shuttle; Fig. 2 is a plan view; Fig. 3 is a detail plan of the threading device; Fig. 4 is an end view; Fig. 5 a bottom view of the threading device.

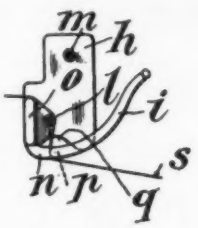



FIG. 3.

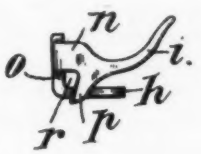



FIG. 4.

FIG. 5.

The shuttle body is provided with the main bobbin chamber, and with a lateral aperture, c, which communicates with the chamber, b, through a central longitudinal channel, d, which extends through the top of the body and is preferably provided with thread guide, e, between the throat, b', and the aperture, c. The aperture, c, is partially closed at the top by the shuttle body and the thread guiding device is fixed within and partly closes the side of the aperture.

The thread guide consists of a plate, h, which is secured to the bottom of the aperture, c, by means of a pin, l, which forms a thread guide and a pin, m, both of which project perpendicular to the plate through holes in the shuttle and plate. The plate, h, has an integral arm, o, bent upward at right angles and bears against the rear wall of the aperture, c, and extends inward therefrom to the near side of the longitudinal channel, d.

A foot, n, projects from the outer edge of the arm, o, partly across the aperture, c, and terminates in a horn-shaped part, i, which extends entirely across the aperture and upward to a point close to the top of the shuttle body at which point a slot, $b^2$, in the top of the shuttle body terminates in a circular aperture. Formed on the lower edge of the foot, n, near the arm, o, is a spur, p, which projects below the plate, h, which at this point is provided with a notch, q, Fig. 3. This spur and notch cooperate with the arm, o, to form an eye, r, Fig. 4, having an inlet through which the thread, s, enters the eye in threading.

The threading is effected initially in the ordinary way by laying the end of the thread over the free end of the part, i, drawing back the end and drawing out the free end of the thread from the aperture, c.

## WASHING AND DRYING WORSTED TOPS.

*(From the Jour. of the Soc. of Dyers and Colourists.*

The apparatus as shown consists of two washing bowls, 1, in each of which is a series of longitudinal perforated guide plates, 2, fixed in perforated supports, 2a, to prevent the several tops or slivers from coming into contact. The slivers, 3, pass between the several squeezing rollers, 4, and over the guide rollers, 5, and after the final nip are separated by passing between the rollers, 5a, comprising a series of circumferental discs, 6a, and are then carried into the drying chamber, 6. In this are a number of guide rollers, 5b, arranged in compartments formed by the perforated partitions, 7, and then follow the open-ended cylinders, 11, with ribbed or corrugated surfaces. In order to open the slivers the fiber is beaten by a series of mechanical beaters, 9, operated by eccentrics, 10. The air is heated by the steam coils, 12, and is driven through the material by the fans, 10a.

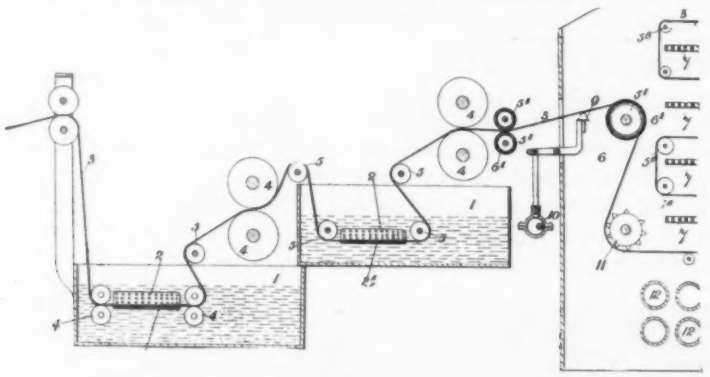


FIG. 1.

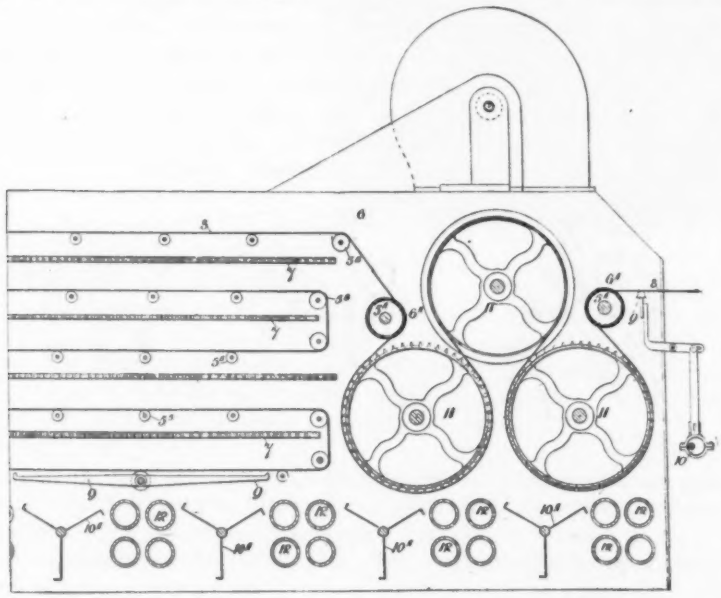


FIG. 2.

## ENGLISH NOTES.

*(By Our Special Correspondent.)*

An outbreak of smallpox in Lancashire is blamed upon cotton from the Southern States and the usual questions are raised as to the possibility or desirability of disinfecting all arrivals of raw cotton. A medical authority observes that it would cost more to disinfect the cotton thoroughly than to turn it into fabrics. There is nothing to show that anyone has identified or even traced the history of the particular lots which have conveyed the disease to Bury. But the source is said to be cotton. In the same way, in 1914 or so, when smallpox is due to reappear in Dewsbury, the vehicle of contagion will undoubtedly be attributed to rags. Probably there will be no more of the smallpox virus in the rags of 1914 than there was in those received during the nine years preceding. Probably the cotton accused in the Bury case is no more or less guilty than supplies that have been used for years. The fact seems to be that every ten years or so a new crop of persons comes into condition to receive smallpox through the agency of most attenuated doses delivered from any source. The Yorkshire rag town had its last epidemic in 1904 and the preceding ones in 1892 and 1874. The Dewsbury health authorities predict and expect others at average periods of ten years apart. Speaking of the present outbreak in Lancashire the medical officer of health for the county has said: "The experience of many years has shown that the disease comes in a cycle and with increasing virulence during a period of ten years and we seem to be commencing that period." The standard medical advice is "Get vaccinated," but in several textile towns the anti-vaccinators are strong and the number of unprotected persons large. In the last Dewsbury epidemic which, because of a breakdown in the sanitary organization, affected 552 persons, only one out of every four had been inoculated against the disease. Be it added that of this needlessly large total only thirteen patients were sorters or pickers of rags.

American cotton is indicated in the present instance, but the medical men agree that it is a less likely carrier of smallpox germs than cotton from Egypt and East India. Medical opinion and common sense agree that the really effective preventative is not so much to treat this or that suspected commodity as to treat the person so that slight contact shall not harm him. Naturally the existence of smallpox in the industry has been used as a further warning against the unsavory practice of shuttle-kissing.

* * *

Whether the latest directory figures be accepted or the statistics of the International Federation be preferred, it is evident that the increase in English cotton machinery during last year was small. John Worral reports 270,606 new spindles and 63 new looms and the Federation figures show 129,265 working spindles more than a year ago. The exact details need not trouble us in view of the enormous increase during the six preceding years, when 12,000,000 spindles and 90,000 looms were added to the equipment. According to Worrall there are now 1,966 separate cotton spinning and manufacturing firms.

Cotton spinning is in a bad enough way to discourage any extensions, but not so bad that the necessary majority could be obtained to a motion for short-time working. Conditions this year are more favorable to an increase of looms, but here the manufacturer is met with the difficulty of obtaining labor. Weavers are emigrating from Lancashire to new lands and the successive generations of girls on leaving school seem less and less inclined for the loom and more and more disposed to the sewing machine or non-mechanical employments. It will be understood that the division of the industry into spinning and weaving departments permits weaving to be good when spinning is bad, and the export of yarn permits spinning to be good when the weaving trades of Lancashire is slack.

* * *

The West Riding County Council—the county authority of the chief woolen and worsted district in this country—has issued a notice which will interest those who seek to

promote cultivation of sheep. The notice requires that:

> Every dog shall at all times during the period between one hour after sunset and one hour before sunrise be kept by the owner under control by being confined in a kennel or other enclosure from which it cannot escape, or secured to some remises by a collar and chain, or accompanied by and under the effectual control of the owner or other person in charge thereof.

The night-wandering dog is liable to be seized by the county police and its owner is made liable to a fine not exceeding $100. The regulation was adopted after a discussion of whether urban or rural dogs were most to blame for disturbing sheep and after two or three members had asserted of their own knowledge that more sheep would be kept were there a more effective control of dogs. Whether the fact had any influence on the council or not, it is perhaps worth noting that stray dogs recently killed eighteen of a county alderman's sheep and that through failure to trace ownership the only compensation obtainable was the $25 obtained for the skins. It has always been said that great railroad reforms would occur in England if only some accident to a train were to kill a railroad director.

* * *

The use of the word "merino" to denote a mixture of wool and cotton in the English hosiery trade was mentioned in the March issue (p. 642), and a British patent specification of the year 1813 throws some light on that subject. R. and F. Copeland patented a new method of manufacturing "shawls, cords and ribbed and plain kerseymeres from a mixture of animal and vegetable wool spun without oil." They mixed these materials "by the common method used in the manufacture of the yarn in Nottinghamshire, Leicestershire and other places, known by the name of Winter Marine or Vigonia." The words, "vigonia," "vigogne" or "vicuna" are still with us and mean much the same thing as a hundred years back—soft and bulky yarns of various materials. "Vigogne" in Grenoble often now means yarn out of Angora rabbit hair. "Winter marine," which name was possibly indicative of the uses and warmth of the goods made from it, apparently survives in the word "merino." Trade names can be traced a long way in the patent registers and in 1836 William Bates was submitting "elastic stocking fabric, known by the name of lamb's wool worsted and angola to a finishing process of a press heated by steam, hot water or other fluid."

In 1843 Samuel Archer was making flannel out of "German cod wool, combined with other wool" and patenting the notion of crabbing instead of stocking the flannel. "German cod wool" is apparently our old friend shoddy. "Cod" in the North of England lingo means sham, imitation or deceit.

Stephen Goulder of London in 1763 had the great idea of rendering sailcloth immune from mildew. He declared: "I make use of a liquid from the animal part of creation—I boil bullocks' pates, sheep's pelts, shreddings of leather and skins of any animal I can conveniently come at." He made use of this jelly instead of starch for sizing and his patent covered "any part of the animal (whether fish, flesh or fowl) which will have the desired effect." Goulder was primitive. Schaub of Manchester (1865) was more refined. He took boiling water and ordinary joiner's glue and added small quantities of gum arabic and licorice. To this he added a little blue vitriol, a quantity of starch, some powdered blue "and lastly one-half litre of cherry brandy." Schaub explained, "the latter is employed to impart a gloss or luster to the yarn." Whitehead (1873) did not surpass this in originality even in proposing to add "about 4 oz. of mustard or other vegetable oil to one gallon of size, varied according to the strength, size and quality of the fabrics."

* * *

The Perkin medal, so named in honor of Sir William H. Perkin, the discoverer of mauve and father of the aniline color trade, has gone this year to the chemist who gave us synthetic indigotin. Prof. Adolf von Baeyer of Munich synthesized indigo first in 1878 and achieved the same feat by different methods later. His fame stands very high in the esteem of dyeing chemists in England and the grant of the medal is the highest tribute the Society of Dyers and Colorists

has to offer. The great research occupied many years and according to the gossip of the laboratories owed its finishing touch to an accident. The story goes that the thermometer broke, allowing mercury to escape into the mixture and completing the chain of ingredients. Von Baeyer's work was that of scientific discovery and synthetic indigo did not become commercially practicable for some twenty years. The professor is 76 years of age.

* * *

British farmers continue to take seriously to heart the "draft" allowance which wool buyers exact from them. Nothing consoles them for it—not even the well-proved assertion that one pound in a hundred, or one in 112 lbs., is allowed in London, Liverpool, Australian and country wool sales everywhere. Once they gave more than one pound in a hundredweight and without knowing it. That was in the days when wool was weighed on small scales and when it brought high prices. Now they are faced at every turn by the superior methods of the colonial growers and have to admit that the colonial wool comes to market in a better state than their own. They notice also the tendency to prefer the large and regular colonial supplies to the smaller and more irregular English clips. That tendency is not new and is more marked at times than at others, but the Lincolnshire farmers have been mournfully going over the facts and digesting the lesson taught them in a round of Bradford warehouses where no pains were spared to show the contrast between Lincoln wool from Lincolnshire and Lincoln from New Zealand. Bradford efforts to educate farmers in the art of getting-up wool are spasmodic and have taken three shapes—the issue of circulars, the sending of lecturers into farm districts and the bringing of farmers to the warehouses to see English and imported wools side by side.

* * *

Horrockses, Crewdson & Co., Preston—the largest English cotton weaving firm and producers of high-class standard fabrics—have taken their own line in the vexed matter of weavers' fines. Explaining that they do not want the money, but do want their level of quality to be maintained, they have arranged to distribute the proceeds of all fines rateably among all weavers in their employment on the pay-day before Christmas.

* * *

Campbell & Harrison and John Cure & Co., combers of low wools, Bradford, and John Crossley & Sons, Halifax, carpet manufacturers and spinners of camel and East Indian materials, have agreed on a little arrangement for lessening the danger of anthrax. As it is certain now that blood-stained hair and wool is the real author of the mischief, their sorters are being paid a premium for every pound of blood-stained fiber taken out and handed to the foreman.

Another item of which managers may hear more is referred to in a report of a cotton card-room operative's official. The frequency with which blood-poisoning follows on cases of minor injury in the mill is under notice. This result used to be rare and now that it is common, interest is taken in the reason for the change. The quality of the oil used for lubricating is blamed and, if the blame can be brought home, oil dealers as well as manufacturers, oppressed by high premiums for accident insurance, may be willing to cooperate in the removal of this source of danger.

* * *

The handsome and comfortable quarters taken in Cross Street, Manchester, by the Textile Institute strengthen the belief that this institution has come to stay. The immediate work in hand consists of preparations for the spring meeting in Manchester, at which technical papers will be read. The Institute takes a benevolent interest in new fibers and materials and exposes samples of them in its rooms. The Textile World Record is on its tables and a devoted few periodically meet in the chambers to transact affairs with the secretary, George Moores, who is also of the British Weights & Measures Association.

---

The total export of silk of all kinds from Japan in 1909 amounted to $66,229,794, nearly all of which was exported from Yokohama.

## EFFICIENCY OR SCIENTIFIC MANAGEMENT.

*BY EUGENE SZEPESI.*
*(Copyrighted)*
(Continued from April.)

The entire elimination of waste is a physical impossibility. No work, no action, can be performed without dissipating some of the energy called into action.

The task of scientific management is to analyze or factor the operations into their simplest forms; then determine the time, material, individual efforts and all cooperators, which are necessary to perform these single tasks. During the advancement of such operations, those individual or factional performances are added or multiplied just as the requirements may be, and the result is that a standard has been laid down for the whole intricate production. This is the standard of highest practical efficiency, or the basis for scientific management. This established standard is not partial. It is based upon observations and calculations; bringing into play the rules required for such determinations and dealing fairly and justly with individual mistakes and individual imperfections. It considers labor as a whole. It fixes the standard for labor service absolutely unbiased; not taking the highest or the lowest individual performer, but taking the average mass. The efficiency engineer, discharging his duty, can be justly compared with the chemist, physiologist, economist and sociologist, as in fact his work incorporates the task of every science mentioned above. His purpose is well performed when he is serving justice to both capital and labor.

The investigations and works performed disclose wonderful and interesting facts in every industry. It discovered waste of material, waste of labor, waste of individual efforts, waste of remuneration, waste of services rendered; in other words, it discovered that mistakes have been made in all directions, mistakes which should never occur. We have physical demonstrations of such cases. The arc of a falling body, gaining momentum on a slant and then continuing its fall through space, can be closely determined by observing the rules; so can the time required and the goal of the fall. When making an experiment like that, without any preliminary preparations, the body will describe an arc, consume time, and reach a point; but not the point intended. The force applied may be greater or less than required; the time consumed may be more or less than necessary.

This is a close illustration of the industrial operations performed today without any standardized and scientific management. A certain phase of manufacturing will be performed. The result may be the actual thing desired. The material required, labor and individual effort extended will be measured and the result will be the manufactured product, but no investigations, or at least no just and unbiased investigations, have been made previously to determine the quantity and the quality of those efforts and the materials required to obtain the necessary results. Harrington Emerson laid down the twelve principles of efficiency, in other words, the rules to be observed in all manufacturing or wealth producing processes:

1. Definite Plans and Ideals.
2. Supernal Common Sense.
3. Competent Guidance.
4. Discipline.
5. The Fair Deal.
6. Despatching.
7. Reliable, Immediate and Adequate Records.
8. Determination of Standards.
9. Standard Practice Instructions.
10. Standardized Conditions.
11. Standardized Operations.
12. Efficiency Reward.

Dealing closely with the textile industry we have reasons, plain facts, which will advocate the application of scientific management methods. There is no doubt in my mind that every textile man will see that the introduction of scientific management will not cause more difficulties in the textile line than it would in any other line. The rules are universal and unconcerned of the details.

Scientific management deals with material, labor, effort, operations performed, and it is indifferent whether the material may be

named cotton, wool, iron, leather, or anything else. It is also indifferent whether the machine is a lathe, a spindle, a loom, or a sewing machine. Therefore the applicability of these methods for textile propositions are undisputed. Coming to the present situation of the textile industry, especially to the situation in the United States, we have ample reasons to believe that a general introduction of efficiency methods would prove beneficial to the whole community.

Taking the textile industry as a whole, we arrive today at the point where, by the improvement of machinery, no reduction of unit cost can be expected for a considerable period. Our Creator dealt with us in the nineteenth century very prodigally. He gave us inventions to such an extent that the hope of raising the manufacturing standard to a considerable percentage, by radical improvements in machinery, must be abandoned. The sudden increase of inventions broadened the applications of textile raw materials, and the universal increase of gold production lowered the standard unit of exchange; consequently the increased cost of all necessities, and also the tendency of artificial or padded increases, such as speculation; the tendency of monopolization, which all times accompanies such movements, greatly increases the cost of raw materials, which, on account of agricultural difficulties and political influences, vary unduly above or below the market line.

There are two reasons in general which advocate the universal adoption of scientific management or standardized practice conditions. In our own country a reduction of cost of production is universally demanded, as it would release some of the capital tied down today and would make it, in general, more elastic, and also would fulfill the demand of the great mass for a reduction.

The most interesting and gratifying phenomenon accompanying the introduction of scientific management is that the laborer is generally the universal beneficiary, as standardized conditions will improve his earning power automatically. This will explain the question which may be put from several sources, that the introduction of scientific management necessitates the reduction of the earning power of the laborer, which may cause trouble. The above statement demonstrates that scientific management cannot be accused of this, as, according to the principles, it is unscientific to reduce the cost of the unit of certain manufacture by a reduction of wages. It is a very regretable fact, especially in the textile industry, that the determination of unit cost of a certain article, in many cases, is done today without any system whatsoever. Those who properly calculate their cost per unit are generally the innocent and heaviest sufferers of this evil. By the application of scientific management exact cost calculations must be obtained and are obtained, as this is the sole purpose of the whole application and therefore this evil would be eliminated entirely.

The universal application of scientific management, or standard practice conditions, would benefit the textile manufacturers individually as well as bodily; would benefit the consumer; would bring just returns to capital and labor; would benefit the whole community, and would eliminate entirely the unjust accusations inside and outside, of the textile industry; and would build up a real American textile industry to the benefit of everyone under the protection of the star spangled banner.

(To be continued.)

## ARTIFICIAL HORSEHAIR.

A Swiss method for manufacturing artificial horsehair has recently been patented in this country, the following having been taken from the inventor's account of the process: It is well known that solutions of copper-oxid-ammonia-cellulose easily decompose at ordinary temperature in consequence of oxidation of the dissolved cellulose, so that after a short time they can no longer be spun. Such solutions must therefore be prepared and stored at relatively low temperatures of about 32° to 41° F. On the other hand it has been found that ammoniacal solutions of cuprous chlorid are well adapted for the preparation of permanent and concentrated spinning solutions. It was already known

that cellulose is soluble in cuprous chlorid ammonia, but hitherto this knowledge has not been made use of in the manufacture of artificial threads or filaments.

In consequence of the reducing action of the cuprous chlorid, the cellulose, when dissolved in cuprous chlorid ammonia, is guarded against oxidation, this being the case even with concentrated solutions prepared and stored at ordinary temperatures, without cooling. But cuprous chlorid may also be used for improving and making permanent solutions of cupric-oxid ammonia-cellulose. If at ordinary temperature, cellulose is added to a solution of cupric oxid ammonia until no more is dissolved and then cuprous chlorid added, it will be possible to dissolve further amounts of cellulose, thus greatly enriching the solution and at the same time rendering it permanent.

By intimately mixing dry cellulose with dry cuprous chlorid a powder is obtained, which if kept from contact with the air, is practically imperishable and from which a good spinning solution can at any time be prepared with the help of a concentrated aqueous solution of ammonia. A part of the cuprous chlorid may be replaced by copper hydroxid. It is also possible to attain this end by impregnating cellulose with cupric chlorid and then precipitating cuprous chlorid by the addition of sulfurous acid. After washing with water and drying, this product will also be easily soluble in ammonia solution. Finally, the cellulose may first be impregnated with ammonia solution and then cuprous chlorid added, and the mass then caused to dissolve by kneading.

In place of cellulose, materials containing cellulose may also be used, for instance, cellulose hydrate or hydro-cellulose. Addition of silk-fibroin, casein and the like are not excluded, but are, however, not advantageous.

Example I: 50 parts by weight of finely divided cellulose, for instance, well bleached cotton, are added at ordinary temperature to 900 parts of an aqueous solution of ammonia of 0.900 sp. g., in which latter 100 parts of cuprous chlorid have been dissolved. By stirring, a clear, homogeneous solution of blue color will be quickly obtained, in which, even with the microscope, no undissolved threads appear. This solution is then filtered through a fabric of wool or a fine hair sieve and pressed through a capillary or slit-like aperture into a precipitating liquid to coagulate. A warm solution of caustic potash or soda is very well suited for a precipitating liquid. The product is washed with acids and water in order to remove all copper salts and finally dried under tension. Acids or solutions of salts may also be used as a precipitating liquid; but in this case the formation of the threads or filaments will not take place so quickly. Also, the products thus obtained are not so strong and firm.

Example II: Cellulose is added to a cupric oxid ammonia solution containing from 2 to 3 per cent. copper until no more is dissolved. The degree of solubility depends on the quality of the cellulose and also on the concentration of the liquid ammonia. When the cellulose is no longer dissolved, but only swells, cuprous chorid in powder form is added, which will then be dissolved together with the swollen cellulose. By alternately adding small quantities of cellulose and cuprous chlorid, it is possible to increase the concentration of the solution to double the initial value without changing the amount of ammonia; at the same time the solution will become more and more viscid. Finally the solution is filtered and further treated as already explained under Example I.

Example III: 100 parts by weight of dried bleached cotton are well wetted in a mixing vessel with 1,250 parts by weight of watery ammonia solution of 0.900 sp. g., to which 150 parts by weight of cuprous chlorid are then added, and then stirred to cause solution. A part of the cuprous chlorid may be replaced by an equivalent amount of cupric hydroxid or carbonic cupric oxid.

---

The entire quantity of artificial silk produced in 1909 amounted to about 12,000,000 pounds. The total consumption of artificial silk in the United States in 1909 amounted to 882,000 pounds.

# *Questions and Answers*

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

### Operatives Needed for a Ten Set Mill.

*Editor Textile World Record:*

How many operatives would be required for a mill manufacturing wool goods like the enclosed samples, which are medium carded woolen goods? I wish that you would make out a list of the machinery for a ten set mill equipped for this class of work, and give a statement of the number of hands required. I would like to have you give the number of each kind of operatives.

Gaylord (1891).

In dealing with the equipment of a ten-set woolen mill, I will begin with the machinery for handling the raw stock. If it is the intention of the party to scour his own wool, it will be necessary to have a four-bowl wool scouring machine, a 21 foot dryer, an extractor, and burr picker, with two men to operate these machines. The next department should be the dye house, equipped with five dye tubs, 8 feet wide, and 4 feet deep, with perforated false bottom, made of cypress and fitted with at least a 3-inch pipe to allow an ample supply of water. It will be necessary to have three men to pole the stock in the tubs and attend to the extracting, with another man to run the dryer and double sheet the stock, and an overseer of dyeing.

The picker house comes next. There should be a fearnaught. This equipped with an automatic feed should properly handle all the mixing for a ten-set mill. It will also be necessary to have an oil tank in which to make and measure the emulsion for the stock, and a duster for the mill waste, also a blower system to convey the mixed stock to the different bins in the card room. Three men should be able to handle the mixing and dusting, under the supervision of the overseer of carding, or his second hand, and attend to the stock.

In laying out the card room, large bins should be built, with a large galvanized iron pipe running overhead, with an opening and switch in each bin, and connecting with the picker house, so as to enable the picker man to blow his stock to any one of the bins. The cards should be four cylinder, 60 by 60 in., with Bramwell feed for first breaker and Apperly connecting with finisher card, combination rubs and garnett breast, also one floor grinder and two traverse grinders. For help there will be an overseer, second hand, and a third hand to reel and weigh the roping. Two strippers, one man to attend to the Bramwell feeds, two men to care for the Apperly feeds, and two boys to attend the finishers.

The spinning room should have twelve mules, 2 inch gauge, four hundred spindles each, and using an 8 inch bobbin, and a filling machine for filling spindle bands. The help would be an overseer, fixer, one man to carry roping from the card room, a boy to sort waste, and twelve spinners.

In the spooling and dressing department, four spooling frames should be sufficient to handle the work, and two dressing frames equipped with size box and dryer for sizing yarn, one twisting machine and one skein winding machine. The help required would be an overseer, one man to help around the room and take warps to the weave room, two dresser tenders, one girl each on the twisting and skein winding machines, and four girls to do the spooling.

In the weaving department it will be necessary to have three drawing in frames, forty-five 82-inch looms for thirty harness work. There should be four box looms. The overseer should have a man to attend

to the reeds and harnesses and direct the drawing in. There would also be required two filling carriers, one boy to sort waste and pick up bobbins, three drawing in girls, and in some places it will be found necessary to have boys or young girls to hand in to the girls that are drawing in warps. One man to look over all warps before starting the loom in order to guard against wrong drawing in or reeding. Two loom fixers, each one to take care of a section of nineteen looms. The remaining seven looms to be taken care of by either a spare hand, or the man who does the perching. The burling and sewing should be under the supervision of the overseer of finishing. The amount of help required depends altogether upon the class of goods made, and the class of weavers in the mill.

The finishing room should have five fulling mills, two 8-string washers, one extractor, one cloth dryer, one sand roll machine, three shears, two steam brushing machines, one press, one dewing machine and one measuring and winding machine. The help in the department, besides the overseer, would include a second hand, two men for the fulling and washing, two men on the dryer, three men on the shears, one man on the press, and one to run the steam brush, or help in the shipping of goods. The engine and boilers would come under the care of the master mechanic, who would have an engineer, fireman and helper.

If the mill was located far from a city it would be necessary to have a fair sized machine and carpenter shop, with a master mechanic, boss carpenter and two helpers.

If some of the stock is to be carbonized, it will be necessary to add two cypress dip tanks with cages for acid, another extractor, and a neutralizing washer to the wool scouring department. The same dryer can be used for carbonizing as well as for wool drying, and one more man would have to be added to this department. Manx.

### Sizing Silk Yarn.

*Editor Textile World Record:*

We note the inquiry of "Tokio" (1270) in your March issue, and would state that the sizing of silk yarn to facilitate knitting is done in several mills by passing the silk yarn through a solution of Sizol Softener without any addition of any kind. The silk yarn should be knit in a damp state and not allowed to dry. This Sizol Softener for silk successfully prevents tendering the silk yarn and its cockling after knitting.

Seydel Mfg. Co.,
81 Steuben St.,
Jersey City, N. J.

### Combing Brushes.

*Editor Textile World Record:*

How are combing brushes for Noble combs made up? What is the best length? Also please describe the setting of the bristles and the difference in qualities? Keighley (1284).

The brush must be broad enough both at heel and at head to slightly overhang the set-over of circles, say half a knot, and long enough to put in and keep the wool well down in the pins, until the strain of separation of sliver is over. While the fibers are being separated there is always a tendency for them to rise owing to the taper shape of pin. For Botany combing the length of stock from a to b, Fig. 1, is 8 inches. Thickness of stock, 3/4 inch. Bristles (c to d), 7 inches. Length of bristle, clear of stock (e), 1 inch; at f (heel end), 7/8 inch. The holes for knots of bristles are bored about 25 per square inch. All knots are wire drawn. No. 1 pure bristles should be used in all parts of the brush. Although these are the most expensive, they are the cheapest in the long run. The other parts of the brush will generally last as long as the brush is repairable, so that the brush lasts as long as the bristles last.

The cover, A, must be screwed, not glued, to the stock so as to be easily removed for repairs. The reason why bristles are made shorter at the heel or heading end of brush is that they may be firmer, and thus better able to press wool into circles. The length is increased at the finishing end for another reason. At the heel end it is sufficient if the wool is put 1/4 inch below the points of the pins, but it needs to be fully half way down at the end where circle leaves brush. When the heel end of the brush becomes so far

worn that it does not do its work properly, it must be taken off, the cover removed and the worn bristles removed and replaced with new ones. It will be found that after constant repairing, the wiring has a tendency to wear away the woodwork. A good way to prevent this is to have a thin sheet of brass or copper fixed on the top surface of the stock at the same time that stock, B, is made. The cost is slight, and the life of the brush is considerably lengthened. When putting on a new brush care must be taken in setting and marking off holes for bolts. The best method is to set the heel of the brush about 1/4 of an inch past the exact point of contact, as shown at Fig. 3, for the following reason. As the heel end of the brush wears away, the whole brush can be lowered by means of a nut or stud in arm of motion, but this can only be done to a limited extent, as the bristles at the broad end of brush will hardly have worn away. Thus care must be taken to prevent the wool being driven so far down in the pins as to lock it and render it liable to be cut instead of drawn, when it comes to be pulled out by the rollers.

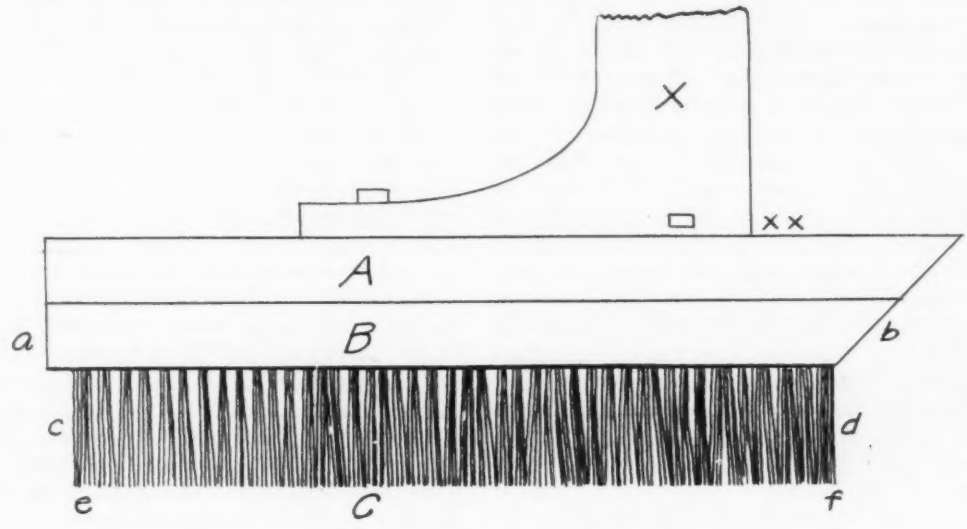



FIG. 1.

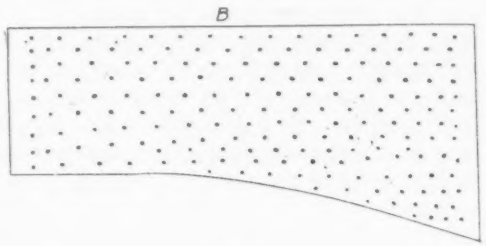



FIG. 2.

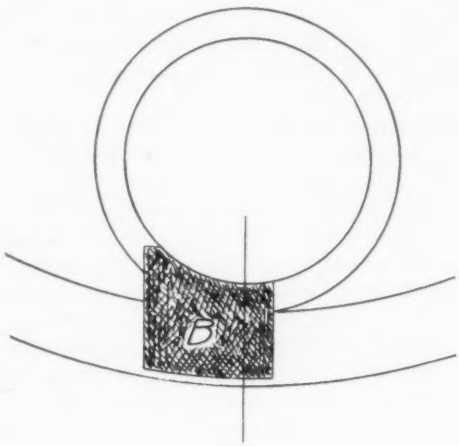



FIG. 3.

When the brush has been lowered as far as it is safe and the heel part is not doing its

work, the bolts which hold the brush to the arm are slightly loosened and packing inserted at XX, Fig. 1, thus throwing the heel part lower and leaving the broad end at about the same level. The reason for setting 1/4 of an inch back, is that the brush being canted, the part, f, shown at Fig. 1, is thrown farther forward. If the brush was set exactly on the point of contact when new it would dab wool in only after the circles had begun to separate, resulting in uncleaned sliver. Another reason why the brushes wear away so fast is that while the brush works vertically the circles are moving horizontally, thus slightly pulling the bristles forward every time the brush dabs. Hence the faster the brush moves into and out of circle, in proportion to the speed the circles are traveling, the longer the brush will last. Many devices have been invented to prevent wear and tear and also to do away with dabbing brushes altogether, but a summary of these must be left to some future date. J. B.

### Finishing Tracing Cloth.

*Editor Textile World Record:*

Can you give us any information on the finishing of tracing cloth such as draftsmen use?

Hayes (1274).

Our special English correspondent to whom this question was referred replies as follows:

The making of tracing cloth in England is in the hands of the book cloth manufacturers and two well known makes are called "Dowse's patent tracing cloth" and "Sagar's patent vellum tracing cloth." Charles Dowse's original patent 11,329 of 1846 provides for the singeing and bleaching of the fabric and its saturation in a solution of resin; either in a solution of 1 pound resin in 1 gallon of water containing about 1/4 pound of alkali, or in a spirit solution. The fabric is to be immersed then in a bath of alum water (1 pound to 1 gallon) and passed into a solution of size, farinaceous matter, gum or gelatine; passing through nip rollers at each operation. White soap, tallow or oil with alkali are enumerated as alternatives to the use of resin; and barytes, strontia, lime and magnesia are named for use either instead of or in combination with alum. Drying may be by means of steam-heated cylinders or of stoves. W. B. H. Dowse in 1881 took out British patent 4715, which affords some information as to his methods. The fabric for treatment is wound on a batting roller led through a straightening device into a mangle of two rolls. The upper roll has an elastic surface and is preferably built of rings of felt saturated in boiling resin and solidified under hydraulic pressure. Concentric holes are cut out for the shaft and the whole is strung together and compressed between screwed ends. The roll is immersed in boiling resin or wax for a period long enough to heat up the resin in the rings and is then left to cool; the felt being thus further compressed by the natural contraction. The lower roll has a smooth surface and may revolve in a pan of melted wax, lifting enough to saturate the fabric which passes over it. Alternately, the lower roller may be lifted clear of the wax and the fabric itself be run through the wax pan and then between the rolls. Again the fabric, instead of passing through the mangle, may run over a flat steam-heated table to be polished. As for the composition, Dowse says paraffin may be used, but that it is preferable to add to it some resin. The straightening device described by Dowse is probably less efficient than the cloth-expanders patented since his day. He provides for steam heat in the wax pan, but gas heat is found better by men who apply melted wax to fabrics for waterproofing purposes. Men who have tried to combine wax and resin by melting find that the resin invariably separates on cooling.

Sagar's patent (122 of 1861) relates to the use of a differential gear to drive a polishing roller. His specification sets forth that two metal rollers with one paper roller between had hitherto been used in finishing tracing cloth. Sagar employed three metal rollers and two intercalary paper rollers, the middle metal one being driven from the engine. He heated this middle or second metal roller and by differential gear ran the rest at a much lower surface speed, so obtaining a higher or better finish.

P. R. Hodge (398 of 1871) patented a process of varnishing ordinary tracing cloth

with gums dissolved in alcohol and of calendering the varnished fabric to make the solution penetrate the previous coating of size or starch and render it non-deliquescent or waterproof and to give it a surface.

Patents by E. J. Goodwin (22,556 of 1892 and 16,693 of 1893) refer to the parchmentizing of vegetable textile fabrics or open texture by treating them with sulphuric acid of a specified strength and temperature, washing them, neutralizing them with alkali, drying and calendering them.

The inquirer has failed to state on which special points he desires information.

James Strand.

### Scrooping of Mercerized Hosiery.

*Editor Textile World Record:*

Kindly inform us how we can obtain a scroop finish on fine 240 needle goods with soft mercerized yarn, like that on the enclosed samples.

Knitter (1285).

In order to obtain a scroop finish on cotton proceed as follows: Wash off after dyeing and handle 1/4 to 1/2 hour at 120° F. in a bath containing 5 to 10 per cent. soap, figured on the weight of the goods. Squeeze or hydro-extract, but do not wash, then put into a bath made up of 5 per cent. Tartaric Acid or 10 per cent. Acetic Acid, 1/2 hour cold. Then rinse. Renmark.

The scrooping of mercerized cotton yarn is best accomplished by treatment of the goods with a dilute solution of an organic acid, and then drying without rinsing. The small amount of organic acid absorbed by the fiber is therefore dried into the cellulose of the cotton, and this causes a certain harshness in the fiber, or rather in the external integument which covers the fiber. The result is that when the fiber is bent it emits a peculiar crackling sound which closely resembles the characteristic crackling of silk. This property is known as "scroop."

There are a variety of acid solutions which may be employed for the purpose of producing this scroop on mercerized cotton. Dilute solutions of the mineral acids, such as sulphuric and hydrochloric acid, it is true, will readily produce scroop; but these acids also act very injuriously upon the cellulose of the fiber itself, causing it to become weakened and disintegrated, consequently the use of such acids is not allowable for the scrooping of mercerized cotton. The acids chiefly employed for this purpose are acetic, tartaric, citric and formic acids. From 3 to 5 per cent. on the weight of the goods of the acid is employed in a sufficient quantity of water to form a suitable bath for the working of the goods. The temperature of this bath should be about 120° to 140° F. The goods are manipulated in this bath until the fiber is thoroughly impregnated with the solution. The goods are then to be taken out and hydro-extracted, and then dried without rinsing. By drying rapidly and at a comparatively high temperature, the degree of scroop will be materially greater than when the goods are dried slowly and at a low temperature.

Acetic and formic acids give very good results and at a low cost. Formic acid, perhaps, give a somewhat higher degree of scroop than acetic acid, and at the present time it can readily be obtained at a price which makes it an easy competitor of the older acetic acid. Tartaric and citric acids are considerably more expensive than the two foregoing acids, and with mercerized cotton it is doubtful if they produce any greater degree of scroop. For the scrooping of silk, which is analogous to that of mercerized cotton, the use of tartaric acid seems to be the most favored. One of the disadvantages of the tartaric and citric acids is that they are solid substances, and consequently when they dry into the cotton fiber they are liable to cause a weakening of its structure by reason of forming sharp crystals within the fiber. Both acetic and formic acids are liquids, and the latter acid is also quite volatile, so that when its solution is evaporated in the cotton fiber, all excess of the acid rapidly evaporates. Acetic acid is not so readily volatilized, and if a too great quantity of acid is employed there may be danger of injury to the cotton when the acid becomes strongly concentrated in the fiber through evaporation. So, on the whole, it would seem that the best agent to employ for the scrooping of mercerized cotton is a dilute solution, 3 to 5 per cent. on the weight of the goods, of formic acid. Howell.

### Bleaching Worsted Yarns in the Klauder-Weldon Machine.

Editor Textile World Record:
Kindly state the latest method of bleaching worsted yarns in the Klauder-Weldon dyeing machine. Bleacher (1275).

It is presumed that "Bleacher" has in view the usual form of Klauder-Weldon skein machines, such as is so extensively employed for the dyeing of woolen and worsted yarns, and also cotton yarns. By reason of the process of bleaching worsted yarns, however, it is not possible to employ this form of machine in the work, however desirable it might be to do so from the point of view of economical handling of the material. Worsted yarn in the wet state is bleached with either solutions of hydrogen peroxide, sodium peroxide, or sodium bisulphite. Neither of these solutions can be employed to good advantage in contact with metals, especially bronze and copper, such as are employed in the construction of the Klauder-Weldon machine. We understand, however, that the Klauder-Weldon Dyeing Machine Co. are building a special machine suitable for the handling of worsted yarns when bleaching with solutions of either hydrogen of peroxide or sodium bisulphite. Hertford.

### Rolls on Spinning Frames.

*Editor Textile World Record:*
How are the best results obtained on spinning frames in regard to the setting of the rollers for various lengths and kinds of cotton?
Spinner (1286).

A number of conditions must be considered before we can arrive at the correct setting of the steel rolls of a spinning frame. It is difficult to give any rule that can be satisfactorily applied to all conditions. There are many points to be considered in addition to the average length of the staple being run, such as the amount of draft in the frame, the speed and size of the rolls, the amount of twist in the back roving, whether it is coarse or fine hank, and the natural conditions of the fibers, which may be of a soft, yielding nature, or harsh and crinkled; and again whether the stock is white or colored. The chief point to be observed is that the distances between the centers of any two pair of rolls should be greater than the average length of the staple used. The excess over the average length of staple will vary with circumstances such as those mentioned above. Try slightly different settings and after each change try the breaking strength of the yarn, or notice which setting of the rolls makes the most ends run well. In general to set the front and middle steel rolls one-sixteenth of an inch farther apart from bite to bite than the average length of the staple being used will form a fair basis upon which to begin. The top rolls should never be set closer than the steel rolls; a little farther in most cases will be better.

Forfar.

### Number of Operatives Required in a Card Room.

*Editor Textile World Record:*
Kindly give me a list of the operatives that would be required in a cotton card room having 60 cards. Kansas (1890).

"Kansas" has not stated whether the card room is to contain combers, and no mention is made of the hank roving that it is intended to make. I will take as a basis a mill making a combed roving which will average 13.80 hank, and a production of about 17,050 pounds per week of 58 hours. For a room having 68 revolving flat cards 40 inches wide, and 64 combers of 6 deliveries each, using a lap 9 inches wide, with jack frames, there will be needed one of each of the following: Overseer, second hand, comber fixer, speeder fixer and shafting oiler, comber oiler, roving hoister, card grinder, grinder's help, 3 picker room men, 4 card strippers and tenders, 7 comber tenders, 4 doubler and ribbon tenders, 1 scrubber, 1 waste boy (combers), 2 drawing frame tenders, 2 intermediate frame doffers, 2 slubber tenders, 2 first intermediate tenders, 4 second intermediate tenders, 19 jack frame tenders. making a total of 60 hands required for a cotton card room. Forfar.

"Kansas" does not state what hank roving is to be delivered to the spinning room, and what the size of the 60 cards are. A 45-inch card will probably require a few more hands

than a 40-inch card would require. For illustration we will take 60 cards, 45 by 50 inches, delivering 6 hank roving for 28s yarn. About 40 hands would be required, not counting the operatives in the picking room.

Norwich.

. .

"Kansas" has failed to mention the production expected or size of roving to be made, and, as these two items, to a large extent, govern the number of operatives necessary, it will be difficult to give any definite information.

Supposing the production to be about 140 pounds per card, or a total of about 5,040 pounds per week for 60 cards on 4 and 5 hank roving, the labor would be about as follows: Two card grinders, one for each 30 cards. Four card hands, one for every 15 cards. These would be expected to do all the work necessary except oil and remove cans from fronts. Four drawing frame hands. The two hands on first drawing are to remove cans from fronts of cards. Card and draw frame hands do all the sweeping, etc. Six slubber hands, one for each slubber of 96 spindles each. When doffing or creeling they are expected to help each other. Six intermediate frame hands, one for each two frames of 144 spindles each. Two doffer girls or creelers to help the hands when creeling and doffing. Sixteen fine frame hands, one for each two frames of 170 spindles each. Four doffer girls or creelers. One section hand. Two sweepers. One roving man. One oiler. Frame hands and doffers are supposed to oil all bolsters, spindles and rolls.

Steuben.

## French and Bradford System of Yarn Spinning.

*Editor Textile World Record:*

Would it be profitable for a manufacturer of French spun yarn to comb it on a Noble comb? Would it be profitable for a manufacturer of Bradford spun yarn to equip his drawing room with the French system, providing the material is fit for it? Dayton (1283).

Bearing in mind the last sentence, the answer to the first part of the question is yes. Some of the largest and best equipped firms who make mule spun yarns use both Nobles, square motion and the rectilinear comb, or some modification of the Heilmann comb. Presuming that "Dayton" makes dry spun yarn, that is without oil in combing, he will get good results from ordinary well grown Botany wool, say 56s and upwards, by using the Noble comb. The one advantage is that it makes no backings and when the stock has passed through the comb, the result is top and noil only. The drawback is that in the slivers from large and small circles, owing to the way the slivers from the

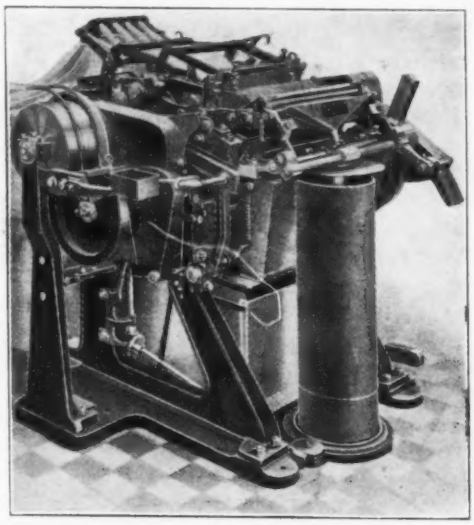


FIG. 1. THE RECTILINEAR COMB.

punch box are fed on the comb, have the fibers lying in opposite directions. This does not make much difference except in very fine counts.

For shorter wools, such as Buenos Aires, short capes, etc., the square motion comb is preferable. Although there is the drawback of "robbings," that is, waste from the square motion fallers, which has to be taken back and recarded, yet the fact that all the fibers are kept in the same direction, just as they left the card, improves their drawing and spinning qualities.

For very short wools and for recombing slubbing after dyeing, there is an advantage in using the rectilinear comb, shown at Fig. 1. The question is asked, what difference

would it make? 1st. The Noble comb is compact and easily driven, and with the exception of dabbing brushes and drawing leathers it costs little for maintenance. But after leaving the backwasher the stock requires to be gilled and punched before combing. This refers only to wools combed in oil. For dry combing the wool is taken direct from the card, and a sufficient number of slivers are put through one gill box, with a fairly long draft, to turn out ends the right thickness for the comb. After leaving the comb, the stock is passed through one finisher and is then put through the backwasher, which cleans the wool and by passing through very fine gills is made into top.

For the square motion, the process for drying combing is one gill after carding, then direct to the comb. For wools combed in oil: backwashed after carding, then direct to the comb, always feeding rough end of staple up first. Although the machine occupies more floor space and takes considerably more power to drive than the Noble comb, yet with wool in oil there is a great saving in not requiring either the first and second gill box or punch.

The cost in brushes and leather is very small compared with the Noble, but in the combs and fallers it is heavier. The rectilinear occupies the least space and requires less driving than either of the above, the treatment after carding for dry combing being either to take direct from the card, or put through two gills, then to comb. If the wool is oiled, it must go through one gill box after backwashing. The cost of upkeep is very small. Neither of the two latter combs require a punch box.

Owing to the absence of twist in French drawing very short stock could not be worked on cap or fly frames. But with fairly shafty sorts it can be and is done to some extent. Instead of the ordinary pin rail for holding the rovings, a creel is substituted, the bottom rail of which has small countersunk holes for the pointed spindle to rest in, while the top rail has slight notches for the top part of spindle to rest against and to keep it from slipping out of position with as little friction as possible.

Another way is to use the ordinary spindle rail in a loose washer running on ball bearings at the foot of each spindle. For very short and tender wools it is preferable after French drawing to spin on mules. J. B.

### Specks in Cotton Yarn.

*Editor Textile World Record:*

Is there a machine or apparatus that will take out the specks in cotton yarn and make the goods look brighter and better? I enclose samples of the yarn and goods. Chapman (1898).

After having examined the knitted sample and the yarn from which it was made it would appear rather doubtful whether there is any process by which the appearance of the finished goods can be improved. Of course imperfections can be covered up to quite an extent in cloth, or other fabrics, which are bleached, dyed, printed or otherwise "finished," but in knit underwear like the sample it is seldom that any of the above mentioned finishes are applied, therefore it is very important that the yarns used should be as nearly perfect as possible, as nits, particles of leaf, slugs, etc., if present in the yarn, are certain to appear in the finished goods. The yarn in the cop which was sent as a sample, seems to be of a very fair quality for a carded yarn made from short staple cotton, but, of course, it is not to be expected that as smooth and bright a fabric would be produced as could be made from a combed yarn. In my opinion there is no process or method to remove or cover the specks in knitted goods which are finished natural, and for that reason it is so very essential that the yarn used should be of the best quality possible. Forfar.

### Meaning of the Term "Swilling."

*Editor Textile World Record:*

I notice that your English correspondent used the word "swilling" in an article on cloth finishing in the February issue. What is the meaning of this word? Dyer (1893).

We referred this inquiry to an Anglo-American in a New England mill and he informs us that the word "swilling" is in common use in the woolen districts of England and means rinsing of the goods after either dyeing or scouring.

# *Knitting Department*

## THE KNIT GOODS SITUATION

It cannot be said that there has been any very active spots in the knit underwear end of the knit goods business during the past month. Neither selling agents, jobbers or retailers have been at all busy and while manufacturers have, as a rule, been running, although some on short time, they are in a position now where they are anxious for future business. Those who make only light weights will either be obliged to shut down, or to make up stock within the next few weeks, unless some duplicate business comes to hand very soon.

It is believed now that stocks of light weight merchandise in the hands of jobbers are quite heavy and that it will take two to three weeks of warm weather to make enough impression on these stocks to have any effect on the manufacturer. A similar state of affairs existed last season and it was not until well into June that the duplicating season assumed any large proportions, but it was very heavy for that month and makers were unable to take care of all the business that was offered them. Just at present there is no shortage of any lines of underwear. Ladies' shaped ribbed goods are a little too plentiful, especially lace trimmed pants.

One of the buyers for a large Chicago retail store states that there is a decided tendency on the part of his trade toward the muslin combination suits, which has the effect of diverting the sale of ladies' ribbed pants to some extent. Ladies' straight ribbed vests are in good demand, both in low neck without sleeves and low neck with short sleeve styles. There is also some call for sleeveless vests made with shields under the arm.

For some time past sheer light weight hosiery has been in vogue, and now there is a tendency among the ladies to call for sheer light weight underwear of cobweb thinness. There are some domestic lines being shown to retail at 50 cents a garment that fill this bill very acceptably, and these sheer light weight numbers are to be found in most of the importer's lines to retail at 75 cents a garment and upward. Most of these are taken in the plain trim style, or if anything fancy is selected, it is usually this style with just a little fancy edging, rather than those with fancy yokes.

The present season has thus far shown considerable increase in the business being done on Venetian and Italian silk under-

THE "VANTA" VEST FOR INFANTS.

wear. There are now several manufacturers making kindred lines and some very good qualities of silk vests are shown made of the glove fabric at from $13.50 and upward. Silk knickerbockers at $24.00 to $36.00 per dozen are selling well and combination suits made of the same fabric are becoming very popular.

The business done by retailers on men's summer underwear has been principally on the balbriggan line, and duplicate orders have gone forward during the past few days to manufacturers who are in a position to make delivery on the low end at $1.85, and the better goods at $3.50. There is also a fair sprinkling of orders on medium priced

balbriggans, running from $2.62 1/2 to $3.00. Men's colored underwear has not sold as well as usual. It is a little early to get a good line on the porous and nainsook fabrics, but judging from the gingerly manner in which retailers have placed orders on these lines with the jobbers, it looks as if they did not expect as good business as last year on the shirts and drawers. There is, however, a much larger call for the union suits and this may make up for the decrease in the two-piece suits.

Manufacturers making fall lines have not as yet taken as much business as at this time last year, and as retailers throughout the country are showing so little inclination to operate on fall lines further, it looks as if jobbers will not be in a position to place any further business until the season opens up. The orders given by retailers for fall have not been in proportion to the sales of other years, but for the most part have been for specials, such as case lots of 25 cent vests and pants, or 50 cent fleeces or ribs, and it is evidently the intention of buyers to wait until the season is on, before placing their general lines.

Manufacturers will not make up stock, except on order and as the production has been curtailed considerably, it would seem as if there is bound to be a shortage of merchandise when the season opens.

A new garment to make its appearance on the market recently is the "Tyvest." This is a novelty in that the manner of fastening does away with the use of button and buttonhole, and saves the annoyance caused by the buttons becoming broken or lost and the buttonholes becoming too large to stay fastened. The neck opening is closed by a tape laced up the front and tied at the neck, and one of the claims made by the manufacturer is that the garment retains its fit, even if the fabric becomes shrunk.

Another new garment, shown in the illustration, which has made its appearance, is the "Vanta" vest for infants and for which the manufacturer claims the following advantages: It is double breasted; has no buttons; goes on like a coat, rather than over the head, and unlike another buttonless garment, fastens in the front, which avoids the necessity of turning the infant over to button or pin.

### HOSIERY

The hosiery market has not improved during the past month and selling agents who breathed a sigh of relief when March was over and looked for big things in April, have been disappointed, and have now pinned their faith to a warm month of May. Undoubtedly a spell of warm weather would help to revive business immensely. There are many who seem to think that until the present Congress passes on the cotton, wool and hosiery schedules, hosiery business will not assume any large proportions. Of course, some business is being done all the time, and during the past month it has been noticed that there is an increased call for ladies' mercerized hose to retail at 25 cents. The sheer gauze weight lisles and silks to sell at 50 cents to $1.00 have been in good demand. Whatever duplicating is being done by jobbers, is practically all on lines of silk hosiery and manufacturers are bringing out new numbers of these to retail at 50 cents a pair. As a result of this demand for silk goods, the fashioned cottons and lisles to retail at 35 and 50 cents receive very little consideration.

It begins to look as if the present season would be one of black hosiery. Certainly there is not the inclination to go into the colored hosiery to match the different colored gowns to anything like the extent that prevailed last season.

So far there has been very little demand for ladies' tan shoes, except pumps for house wear, and the only indication that there might be a call for tan hosiery is the fact that there have been numerous calls for low shoes made of silk, satin and woven fabrics in golden brown color. These would naturally call for silk or mercerized hosiery to match. Indications are that there will be a limited business done on the light shades of lavender, grey and blue.

We mentioned in a recent issue that a line of 25 cent silk half hose had been put on the market by William Taubel. Several other manufacturers have now followed suit and

there are a number of lines of silk plaited and pure silk half hose being shown. These are made with lisle top, heels and toes. The principal business with the retail trade today is on these lines to the exclusion of the cottons and lisles.

The demand for white hosiery for ladies has failed to materialize to any extent as yet, but there is quite a call for white hose for children.

Hosiery manufacturers who make fall lines are, as a rule, anxious for business. Ordinarily, they are well sold up into September or October by this time, but from all the information that we can gather, the majority have only business enough to occupy their machinery for from sixty to seventy-five days. Of course, there are some exceptions to this and one of them is a prominent manufacturer of fleece lined goods, and of him, it is said, he has business enough to run full up to December first.

## FULL FASHIONED KNITTING.

*BY PAVONIA.*

(Continued from February.)

The principle as applied by Cotton to his system of knitting involved a change of the needles from a horizontal to a vertical position; or a change exactly at right angles to the line in which the needles and points were situated on the other systems of flat knitting before this system was invented. This made it necessary to change the direction of the sinkers from a vertical to a horizontal movement. The sinker actions are a very important function in the shaping operations, doing chiefly that part of the work which, as explained, was formerly done by hand.

The cam marked 2a in Fig. 8 is illustrated in Fig. 68 with the apparatus for giving motion to the narrowing-machine. There are four or five of these on an eighteen section leg machine, and eight on a footer. The rollers run on the upper edge of the cams, and carrying the weight of the narrowing-machine through the upright arm, A, Fig. 68. They make all their motions without the aid of tension springs, and the control of the varying relations between the narrowing points and needles (in so far as their vertical movements are concerned) by gravity, is regulated by the cams on which the rollers run.

The narrowing-machine extends along the entire combined sections of the knitting machine, and until very recently the rods which carry the narrowing points were even longer than the combined knitting sections. On some machines, on account of the extreme delicacy of their adjustments and the disturbance from changes of temperature, these rods carrying the narrowing fingers have been cut in salves.

Fig. 68 shows that the narrowing-machine, besides having a vertical motion, has accommodation for a horizontal movement of the rods which carry the narrowing-points. The points must be capable of being moved horizontally or sideways, for in the process of widening or narrowing, the points which take off the stitches are constantly changing position to enable them to operate on different needles. The horizontal or side-movement must, therefore, be in a line parallel to the tops of the needles. To accomplish this, the rods carrying the narrowing-points are arranged in slides, which guide the points and hold them in position relative to any needles on which they are operating or are to operate at every point of the machine.

The side movement of the narrowing-points is controlled by various devices on different machines, and is timed to act in harmony with the other motions, either in fashioning, in preparing or in setting the points in the exact position so that when the fashioning does take place they will be ready to combine with the needles in their performance of the transferring motion. The side movements of the points are generally by steps of two needles; that is, the automatic movements in connection with widening and narrowing. In the case of the French foot or heel this is different; the steps are in portions only of two needles, while in the greater number of instances being movements of two needles in one direction and one needle in the other direction, which ac-

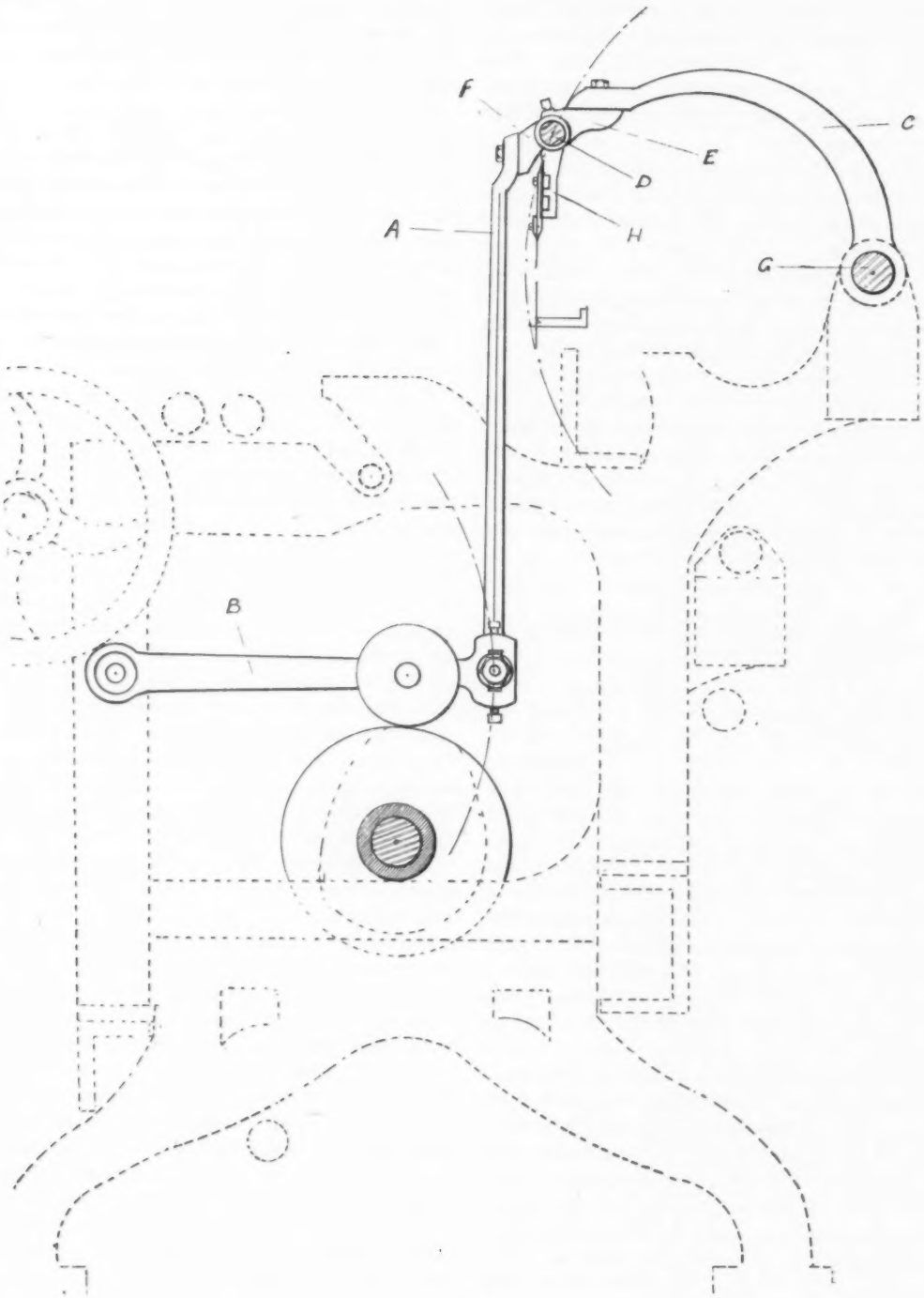



FIG. 68.

counts for the peculiar gusset effect in the toe of French-foot stockings. The usual method of regulating this side motion has been by a worm arrangement which is made to govern the points by its contact with the end of the rods to which they are attached.

No change is made in the vertical motion of the narrowing-points, that is, they are not subjected to any variation other than that produced at each revolution of the cams. This is always the same, for only one set of fashioning cams, adjusted to work in unison, is ever used. Each time that the narrowing machine is brought into action, which is always through the shogging or cam changing process, the narrowing points move over a certain path irrespective of whether widenings or narrowings (single or double) are made, or whether eyelet holes or lace openwork, etc., which require the bringing into action of the narrowing machine, are made. The vertical motion is no factor in determining what kind of a fashioning shall be made, its operation being such as to accommodate without change of any kind that the side motion device chooses to indicate.

Fig. 68 shows that the vertical line of the narrowing-machine is not perpendicular, forming a segment of a circle with its center at G.

It being essential that the rods carrying the narrowing points shall be free to slide sideways, and yet maintain the accuracy of their meshing on the needles at all points of the machine, a heavy rod of steel is used as a base on which to construct the narrowing-machine proper. It is shown at D. The rod is connected by arms to the other heavier rod or shaft, G. Both these shafts, D and G, extend the full length of the narrowing-machine.

Shaft G is the center of a circle through which the narrowing-machine would swing if disconnected from the arms, A, and it were otherwise free to move. The narrowing-machine cannot move more than a few inches for it is held by the arms, A, on the front and by a bearing for shaft, G, on each standard of the machine. There being ten bearings for shaft G on an 18-section machine, it is held absolutely rigid while still having freedom for its arc of motion. The arms, C, are fastened on to shaft, G, by set screws and the rod, D. is connected to these arms by brackets, E, these brackets being fastened to rod, D, with set screws. Rod, D. is set parallel to shaft, G.

The slides for the narrowing-point rods, H, are attached to the rod, D. in the manner shown in the drawing. There are 19 or 20 of them on an 18-section footer. All being fastened in a perfect line at proper intervals on rod, D, they form an excellent guide or slide for the rods on which the narrowing-point fingers are fastened. This makes it possible for the narrowing-points to remain parallel with the needles at all times.

## OUR TRADE WITH CHEMNITZ

*Editor Textile World Record:*

The statement given below has been sent to me by a well-informed merchant. The figures were obtained from the Chemnitz Chamber of Commerce, and among the interesting items is that which shows quite an increase in the silk hosiery brought to this country during the past year. It also shows that many more woolen gloves are being imported. These figures do not include cashmere gloves, but are the figures for knit gloves and Ringwoods which were quite popular last year. I quote from his letter as follows:

"Underwear has fallen off some, owing to the pretty styles of fancy ribbed vests produced in your country and with which our manufacturers cannot compete on account of the high duty.

"Orders are coming in quite freely, but the quantities being placed are very much smaller than in former years.

"Statement of goods exported from the Chemnitz district to the United States during the last three years:

| Class of Good | 1908 | 1909 | 1910 |
|---|---|---|---|
| Gloves, cotton | $2,154,873 | $1,320,814 | $2,028,990 |
| " silk | 374,817 | 46,099 | 28,995 |
| " woolen | 66,461 | 92,446 | 112,534 |
| Hosiery, cotton | 5,913,606 | 6,759,496 | 4,460,257 |
| " silk | 100,527 | 125,554 | 192,107 |
| " woolen | 31,437 | 44,206 | 26,018 |
| Underwear | 122,880 | 113,012 | 108,032 |
| Upholstery cloth | 54,238 | 50,280 | 49,101 |
| Trimmings and buttons | 359,627 | 828,524 | 914,755 |
| Woolen dress goods | 319,409 | 455,617 | 367,481 |
| Paper boxes | 79,913 | 144,110 | 124,425 |
| Toys | 70,740 | 93,854 | 59,582 |
| Machines and needles | 345,735 | 520,249 | 725,464 |
| Total | $11,186,782 | $12,460,385 | $11,205,435 |

"Included in the machinery imported last year were the following: 25 lace machines, 48 embroidery machines, 10 crochet machines, 3 spinning machines, 17 finishing machines, 235 cotton frames for hosiery, 5 Paget hosiery looms, 515 circular and flat knitting machines, and 900 sewing and looping machines for hosiery." Fillmore.

## MERCERIZING FASHIONED KNIT GOODS ON FORMS.

Robert Mueller, machine builder at Limbach, Saxony, gives the following account of a process of mercerizing knit goods which he has recently patented in Germany: In mercerizing knit goods on flat forms it is necessary to clamp the hosiery on the form in order to prevent shrinkage during the mercerizing operation. With the new process the hosiery is drawn on the forms, a number of which are placed on top of each other and in this form the goods are subjected to the mercerizing process. The contact of the forms which each other holds the stocking in place, preventing a shrinkage of the goods. The forms are perforated so as to allow the free circulation of the liquor. Each bundle of forms is tied firmly with stout cord to hold them in position during the centrifugal treatment with the caustic solution. The goods are handled in the ordinary way for mercerizing in the centrifugal machine. The tying of the bundles forms no part of the invention.—Leipziger Monatschrift fuer Textil-Industrie.

There are about 9,000,000 persons employed in the United States in the production of cotton, its handling and in the industries for which it furnishes the raw material.

The value of cotton manufactures imported into Germany during 1910 was $64,349,488, while the value of the exports was $95,524,870.

The number of active spindles in France increased from 5,500,000 in 1900 to 7,100,000 in 1910, and the consumption of cotton from 700,000 bales in 1900 to 951,000 bales in 1910.

## A CIRCULAR KNITTING MACHINE.

This machine, recently patented, is described by the inventor as follows:

The new construction belongs to that class of knitting machines in which the needles are

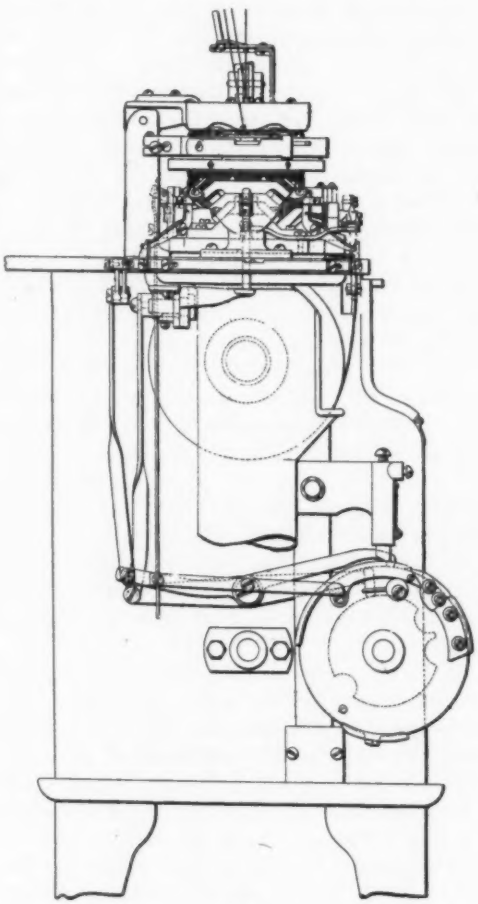


FIG. I.

mounted in a needle cylinder, and are operated upon by cams and controlling devices arranged about the cylinder, relative movement between the needles and the needle operating cams and devices being produced by rotary and reciprocatory movements of either the needle cylinder or the support or cylinder on which the needle operating cams and devices are mounted.

Certain features of the invention relate

more particularly to the provision in a circular knitting machine in which the needle cylinder is given rotary and reciprocatory movements to effect the knitting, of needle operating cams and controlling devices so constructed and arranged that split foot stockings may be knit.

Other features of the invention contemplate the further provision in a machine of this character of a construction and arrangement of needle operating cams and controlling devices by which the leg of the stocking may be knit from two yarns in two continuous circular courses, while the foot is knit from continuations of these yarns in courses extending back and forth across the upper part and sole of the foot respectively, the heel and toe being knit from one of the yarns of a continuation thereof.

upon a machine in which the relative movements between the needles and the needle operating cams are produced by rotary and

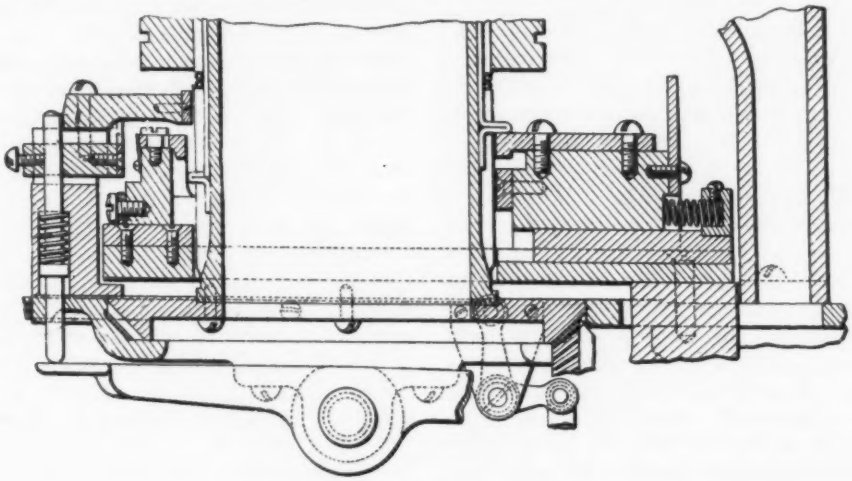


FIG. 2

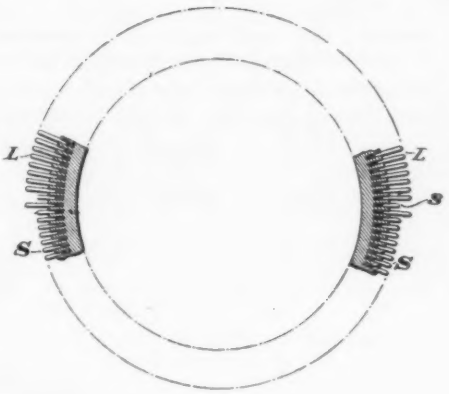



FIG. 3.

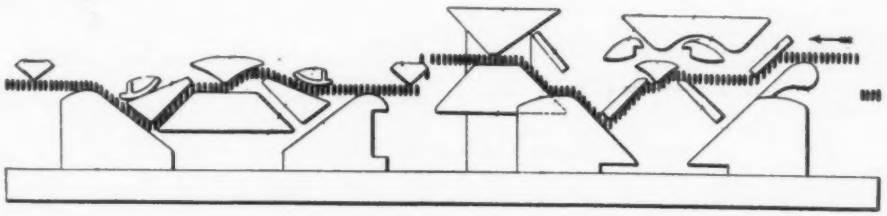


FIG. 4.

The construction of the cams and devices is such that the needles are operated and controlled in producing a split foot stocking reciprocatory movements of either the needle cylinder or the support or cylinder on which the needle operating cams are

mounted. There is also a novel form of picker for shifting needles from one plane to another during the relative travel of the needles past the picker.

Fig. 1 is a side elevation of the improved knitting machine; Fig. 2 is a vertical sectional view with the needle cylinder removed; Fig. 3 is a diagram illustrating the arrangement of the needles; and Fig. 4 shows the interior development of the cams and needle operating devices in position for reciprocatory knitting on the foot. The needles are of the type known as latch needles, and are carried in a needle cylinder which is mounted for rotary and reciprocatory movement, and the needles are operated and controlled during the knitting by cams carried by a cam plate which may be moved vertically to control the length or tightness of the stitch drawn by the needles.

Certain additional needle operating and controlling devices are used so that the mode of operation of the machine is changed and a different product is produced. Only so much of the machine as is necessary to an understanding of the invention is shown, it being understood that the motion changing mechanism and the pattern mechanism for controlling the movements of the shaft which carries the controlling cams are substantially the same in construction as in the Hemphill machine. In the present machine, however, the cam for controlling the change of motion is so shaped that the needle cylinder is reciprocated during the knitting of the foot of the stocking as well as during the formation of the heel and toe.

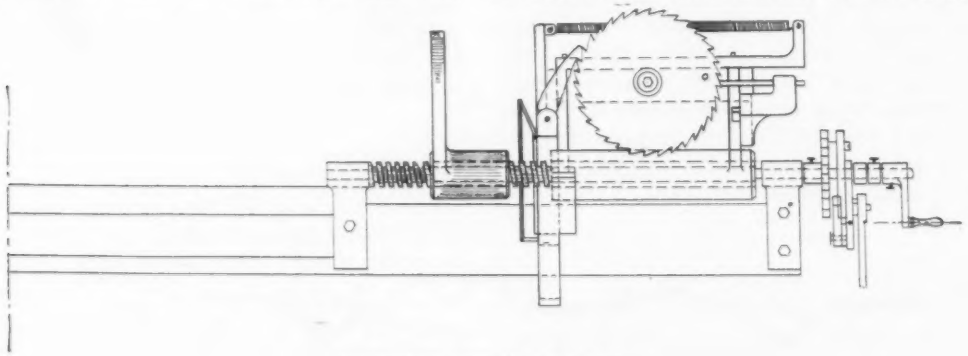
In the machine shown the needles are mounted in vertical slots formed in a needle cylinder, which is secured to a plate mounted in the bed plate of the machine, and provided with a beveled gear engaged by a beveled gear, through which rotary and reciprocating movements are imparted to the needle cylinder. The cylinder operating gear is secured to a drive shaft, and rotary and reciprocating movements are imparted to the drive shaft through motion changing mechanism of well known construction. The needles are divided into two substantially semi-circular groups or series, L and S, the needles, L, being provided with long butts, and the needles, S, with short butts, as is common in this class of machines. Between the two long butt needles at each end of the series, L, short butt needles are interposed. The short butt needles and the end needles of the long butt series comprise the suture needles for connecting the fabric knit upon the two groups of needles in knitting the split foot.

## Carriers on a Knitting Machine.

Editor Textile World Record:

Please inform me if the Cotton Patent machines were ever built with the carriers running at a uniform lead (ahead of the sinkers) regardless of the width of needles knitting? To put the question another way: Can the thread carriers be made to run two inches ahead of the sinkers from full width to the finish? And if so, how was it done? Possibly by locks on the racks, to the detriment of the racks. Is there any other way?

Amory (1282).



CARRIERS ON A KNITTING MACHINE.

We referred this inquiry to Otto Walther, American agent for Schubert & Salzer Maschinenfabrik, who replies as follows:

"The carriers can be made to run ahead of the sinkers at any length desired by means of locks fastened to a bracket on the patent spindle, the bracker being separate from the main rack, so that it does not have a detrimental influence on the same. I have endeavored to make this clear in the illustration shown."

## KNITTING MILL NEWS.

**New Mills.**

*Alabama, Anniston. The United Hosiery Mills have been chartered with authorized capital stock of $100,000 and the following officers have been elected: S. C. Meade, president; L. V. Moore, secretary, and J. W. Hellings, treasurer. Mr. Meade comes from Philadelphia and is a nephew of Newton Wilson, superintendent of the Anniston Cordage Co. A 65 by 100-foot brick building on West 10th St., formerly occupied by the Houston Mercantile Co. has been secured and 65 knitting machines will be installed.

Illinois, Chicago. The new knitting mill to be started at 1010 West 12th St. by Nathan A. Siegal, formerly of the firm of Gorchakoff & Siegal, proprietors of the Western Knitting Mills, will be operated under the name of the Gibraltar Knitting Mill. Mr. Siegal at first intended to do business under the style of the Siegal Knitting Mills.

North Carolina, Morganton. A knitting mill will be located in the building formerly occupied by the Catawba Valley Canning Co. by R. B. Moore, T. L. Sigmon of this place and one of the Messrs. Garrow of the Waldensian Hosiery Mill, Valdese, North Carolina. The new company will have capital stock of $15,000.

*North Carolina, Washington. The Tar River Hosiery Mill, which it was reported some time ago would be equipped and operated by J. T. Lewis, is in operation, giving employment to 35 hands. Thirty knitting machines and four loopers have been installed and are being operated on children's and misses' ribbed hosiery. The plant includes a dye house and a steam power plant. J. T. Lewis is proprietor and D. B. Simpson, superintendent.

Ohio, Cleveland. Richard Elbel will start a small knitting plant at 2033 West 52d St., S. W., with three knitting machines and two sewing machines, making a specialty of men's and women's sweater coats and cardigans. He will attend to the buying and selling personally. Mr. Elbel was formerly engaged in the knitting business, but retired about two years ago. He will invest about $3,000 in the project.

*Pennsylvania, Auburn. The Walborn Knitting Mill has begun manufacturing women's ribbed underwear. Claude D. Walborn and J. A. Walborn are the proprietors.

*Pennsylvania, Honesdale. Details of the new Honesdale Knitting Mills cannot be learned at present, but they are understood to be arranging for a plant. A charter was granted in February with capital stock of $20,000, and H. Preumers is one of the men interested.

Pennsylvania, Philadelphia. The Lemuth Hosiery Co. has leased the third floor of the new building recently erected by the Ontario Dyeing Co., at Ontario and D Sts. The company will equip its plant with, it is said, three sets of full-fashioned machines, which are now on the way from abroad, and will manufacture a line of full-fashioned silk hosiery. They take possession May 1.

*Wisconsin, Stoughton. The Stoughton branch of the National Knitting Co. of Milwaukee has begun operations with H. Kroetz as manager.

**Enlargements and Improvements.**

Canada, Ontario, Hamilton. The new dye house being added to the plant of the Chipman-Holton Knitting Co. will give 8,000 sq. ft. of additional floor space. The new building is of brick and concrete, 1 story high.

Canada, Ontario, Paris. Two new pickers have been installed by Penmans, Ltd.

*Illinois, Belleville. The new mill and installation of equipment for the Belleville Hosiery Mills are completed and the mill is fitted up to make fine gauge mercerized half hose exclusively. They will do their own dyeing and finishing, having facilities for dyeing any color wanted. All the equipment is of the latest pattern. The capacity is 350 dozen a day, sold to jobbers only.

Illinois, Champaign. The Textile Mfg. Co. of Chicago has awarded contract for the erection of its branch mill to A. W. Stoolman, while Carson-Payson Co. secured the plumbing and heating contracts. Work has been begun. The Textile Mfg. Co. manufactures men's and women's underwear at 213 Institute Place, Chicago.

*Massachusetts, Needham Heights. Work is going forward on the two-story and basement addition to the plant of J. B. Thorp. The enlargement will be 40 by 56 ft.

Massachusetts, Pittsfield. Four new electric motors have been installed in the plant of the Musgrove Knitting Co.

Massachusetts, Wakefield. About May 1 work will be started on a three-story addition, 180 by 90 ft., for Winship, Boit & Co., proprietors of the Hartford Knitting Mills. It is understood new equipment will be added to give employment to about 200 additional operatives, although the company declines to make any statement as to this. Women's and children's fine ribbed underwear and children's fleeced underwear and union suits are manufactured.

Minnesota, St. Paul. The knitting plant formerly known as the North West Knitting Mills, Brooklyn, New York, has been removed here, and is being operated under the style of the Minnesota Knitting Mills Co. at 578 John St. The office is at 405 Grove St. They have 12 knitting machines and eight sewing machines, making sweaters for men, women and children, but they

plan to put in more machinery immediately. Wool, worsted and zephyr yarns are bought.

*New Hampshire, Manchester. Little if any new equipment will be installed by the Elliott Mfg. Co. in the 70-foot addition now under construction. The enlargement is mainly for storage purposes.

New Jersey, New Brunswick. The Norfolk & New Brunswick Hosiery Co. will build a new mill on Neilson St., 55 by 110 ft., 4 stories high and will remodel one of the present mills. In addition a new dye house and new boiler house will be constructed. The changes are being made with the idea of modernizing and concentrating the plant. All the property on the north side of Hamilton St. has been sold to Johnson & Johnson.

New York, Cohoes. Improvements at the bleachery of the Putnam Knitting Co. are nearly completed and the plant will be operated to full capacity shortly.

New York, Brooklyn. The Utopia Knitting Works, S. Rottenberg, proprietor, 232 Throop Ave., have removed to their new mill at East New York and Christopher Aves., which was recently completed.

New York, Kinderhook. Additional machinery is being installed by the Kinderhook Knitting Co., which will give total equipment of 70 knitting and 25 sewing machines. The capital stock of this company is $30,000. F. B. Van Alstyne is president and buyer; J. A. Reynolds, treasurer, and Frank S. Hoag, superintendent.

New York, Utica. An increase has been made in the capital stock of the Lynch Knitting Co. to $20,000 and 7 more knitting machines will be installed.

New York, Utica. A three-story and basement brick mill, 54 by 168 ft., is to be built by the Capron Knitting Co. at 232 Whitesboro St. and an enlargement will be built on an old building, one story high, 54 by 108 ft. When the new mill is completed the offices and part of the plant will be moved into it. Contract for the mason work has been awarded to George Shippy, and Henry Kassing has been awarded contract for the woodwork. Building operations will be started at once and they expect to be producing goods in the new mill by August 1. Charles A. Byington is president; John A. Roberts, treasurer, and W. C. Plunkett, manager and buyer.

*New York, Utica. The new mill for the Kendall Dept. of the Frisbie & Stansfield Knitting Co. is being equipped, the machinery being removed from the old Kendall plant. Construction work on this new building has been in progress since last October. The plant of the Ontario Button Co., controlled by the same interests, is to be moved to Utica to the mill in which the Kendall Dept. has been located. The output of the button company is used by the Frisbie & Stansfield Knitting Co.

New York, Warsaw. New bleaching equipment has been installed by the Brown Knitting Co. George A. Clark, the superintendent, reports that they have orders on hand which will require several months to fill.

*New York, Watertown. F. A. Caswell of Waterford has been awarded contract for the construction of the new mill of the Shaughnessy Knitting Co.

*North Carolina, Durham. Contract has been awarded for the recently mentioned addition to the Durham Hosiery Mills, Inc., to N. Underwood of Durham. The enlargement will be 3 stories high, 113 by 135 ft., and will represent an investment of about $25,000. It will be used for office purposes, storage and finishing department.

Pennsylvania, Allentown. In March the incorporation of the Tisbest Knitting Mills, with authorized capital stock of $200,000, under the laws of New Jersey was reported. One hundred thousand dollars has been paid in, and the new corporation has taken over the plant and business of the Sorosis Silk Co., which they will continue. There are at present 40 knitting machines and this number will be increased, although the number of machines to be added has not as yet been decided upon. Joseph S. Mack, president, and C. J. Ross, secretary and treasurer of the Sorosis Silk Co. were mentioned as incorporators of the Tisbest Knitting Mills and are interested in the new company. Chas. F. Jones has been elected president and buyer, and C. J. Ross treasurer.

Pennsylvania, Blandon. Ten new knitting machines have been installed by the Maiden Creek Hosiery Co., owing to increased business.

Pennsylvania, Easton. One hundred and eighty knitting machines are being instaled in the Chipman Knitting Mills at the rate of 20 machines a week. A new line of ribbed hosiery will be made. Heretofore women's seamless hosiery has been the only product.

Pennsylvania, Philadelphia. The Campbell Hosiery Manufacturing Co., of which Wilson A. Campbell is the proprietor, has been removed from 11th St. and Columbia Ave. to the northeast corner of Jasper and York Sts., and ten new knitters added to the equipment. The plant is run on women's seamless, plain and mercerized hosiery, which he sells through New York.

Pennsylvania, Philadelphia. F. A. Metz, proprietor of the Alpha Knitting Mills, now located at Orianna and Vine Sts., where he manufactures high-grade sweater coats, has had plans prepared for a new five-story manufacturing building to be erected at the northwest corner of 6th and Spring and Garden Sts. on a site recently purchased for that purpose.

Rhode Island, Woonsocket. Plans are being prepared for a new spinning mill, 58 by 110 ft., for the Rathbun Knitting Co. Fleece linings, jersey cloths and stockinet are manufactured on 140-spring needle knitting machines. Geo. H. Emmot is treasurer and buyer.

Rhode Island, Woonsocket. The Dunn Worsted Mills have awarded contract for the erection of a one-story brick weave shed, 80 by 322 ft., which will be ready for occupancy during this summer. Work on the building will be started at

once. As noted in February, they will add 31 new looms.

Tennessee, Knoxville. The Appalachian Mills expect in the near future to install machinery for spinning their own yarns in the building recently bought at the sale of the Knoxville Woolen Mills.

**Mills Starting Up.**

New York, Mohawk. About May 15 the Muldoon Underwear Co.'s plant will be started up on cotton and woolen underwear. A new company is being formed which it is said will operate the Muldoon plant and a second plant at some other point. It is proposed to add a new bleaching and dyeing department to the local mill.

New York, Wellsville. There is a report that the Wellsville plant of the Merrill Silk Co., which was discontinued some time ago, has been started up again.

**Mills Shutting Down.**

Ohio, Byesville. The Snag Proof Hosiery Co., manufacturers of a general line of hosiery, have shut down their plant on account of water and sewage and if they operate it again will remove to a new location.

Pennsylvania, Manheim. It is reported that the Manheim Hosiery Mills Co., manufacturers of seamless cotton half hose, with 72 knitters and ten ribbers, have shut down their plant. It cannot be said when it will be started up again.

**Facts and Gossip.**

Canada, Ontario, Toronto. The Puritan Knitting Mills, Ltd., have decided to change their firm name to the York Knitting Mills, Ltd.

Canada, Ontario, Woodstock. The Kem Knitting Co., Ltd., has been incorporated to manufacture all kinds of knitted goods except knitted underwear made from cotton yarn. The capital stock is $100,000. The incorporators are K. W. Harvey, W. W. Barrowclough and G. E. Mahon, all of Woodstock. Messrs. Barraclough and Harvey are treasurer and manager, respectively, of the Oxford Knitting Co. of Woodstock.

Georgia, Rome. The Rome Hosiery Mills are considering increasing the capacity of their plant. An overtime schedule has been in force for months.

Kentucky, Paducah. The factory and site of the Wisdom Hosiery Mills, more recently known as Phillips-Lack Co., has been sold to satisfy debts. W. M. Rieke of Paducah purchased the site for $10,000 and the other property was sold to D. H. Hughes, attorney for creditors, for $8,000. The plant has not been operated for some time.

Michigan, Ypsilanti. J. B. Colvan Co. have increased their capital stock from $5,000 to $7,500. Knitted silk underwear is manufactured.

New Jersey, Paterson. Rudolph Rickenback is operating a plant of 28 knitting machines on men's and women's sweater coats and bathing suits. He would like to interest persons who would become interested financially. This probably refers to the starting up of the Paterson Knitting Works, which were sold out a few weeks ago.

New York, Brooklyn. The Majestic Knitting Mills Co., manufacturers of all kinds of sweaters, have moved to new quarters, 403-5 Bedford Ave. and 127-29 South 8th St.

New York, Brooklyn. The Kingston Knitting Mills, 858 Flushing Ave., manufacturers of sweaters, have gone out of business.

New York, Brooklyn. The Bear Knitting Mills have been incorporated with capital stock of $1,000 by Kalman Awerman, 1719 Seigel St.; Sam L. Levitt, 180 Vernon Ave., and Louis Machinsky, 480 Broadway, Brooklyn.

New York, Boonville. A meeting of the men interested in a knitting mill proposition has been held at which a committee was appointed by the village clerk, J. A. Bateman, to make a canvass of the village and see how much stock of the company could be sold. Two officers of the company which may remove here were present and outlined their plans. They desire to increase the capital stock. If residents of Boonville will subscribe a sufficient amount the mill will be located here.

New York, Brooklyn. The Kingston Knitting Mills, formerly at 858 Flushing Ave., are now located at 1001 Flushing Ave. Five knitting machines and 3 sewing machines are operated on sweater coats for men, women and children.

New York, Corinth. The Corinth Business Men's Association is negotiating with Edward Wall, Jr., of Fort Ann, N. Y., relative to the removal of his knitting plant from Fort Ann to Corinth. Mr. Wall manufactures ribbed cotton underwear and sweater coats on 26 latch needle knitting machines and 35 sewing machines.

New York, Dalton. A charter has been granted the Keshequaw Knitting Co. with capital stock of $10,000. Wm. D. Burt is president; Merton L. Bentley, treasurer and buyer, and Jay Lyon, superintendent. The new corporation succeeds the concern of the same name located here about a year ago and manufacturing men's hosiery on 6 knitting machines, using 14s, 16s and 40s yarns. The plant is operated by steam power.

*New York, Ebenezer. It is reported that alterations will soon be made on the factory building on Mill Road preparatory to fitting it up and operating it as a knitting mill.

New York, New York City. The Wm. N. Daniels Knitting Mills have removed from 120-22 East Broadway to 505 East 171st St. They make knitted coats and bathing suits.

New York, Utica. The preferred stock recently issued by the Utica Knitting Co. has been entirely subscribed for according to a member of Spencer, Trask & Co., New York, who are acting as underwriters for the concern.

New York, New York City. The Alden Knitting Co. has leased a loft at 6 West 29th St. Knitted neckties are manufactured.

New York, Oswego. There is no truth in the report that business men of Oswego have agreed to take over the Oswego Knitting Co.'s property, formerly controlled by Robt. MacKinnon Co. The mill is at present shut down and the company is in the hands of creditors who are offering the property for sale.

# *Dyeing, Bleaching, Printing, Etc.*

## TO DETERMINE WHETHER COTTON HAS BEEN DYED WITH A DEVELOPED BLACK.

*BY J. MERRITT MATTHEWS, PH D.*

In the dyeing of black on cotton a wide variety of products may be employed; as a result there may be a great variation in the tone and general character of black dyed cotton, as well as much difference in the fastness and value of the color. The principal blacks to be met with on cotton at the present day may be summarized as follows:

1. Logwood Black.
2. Substantive or Direct Black.
3. Developed Black.
4. Sulphur Black.
5. Aniline Black.

These include practically all of the different classes of black dyeings which are liable to be met with ordinarily on cotton. There are some other dyeings which may be employed to give a black color on cotton, such as iron tannate black, combinations of basic dyes to give black, and even black obtained with Indanthrene or vat colors; but such blacks would be more or less curiosities in practical dyeing at the present time, and it would be a useless encumbrance to bring these into the consideration of the question.

Developed Black is especially desirable on account of its beautiful tone or quality of color; it furnishes a "bloom" which is very pleasing to the eye. Although of sufficient fastness for most purposes, nevertheless it does not possess the high degree of fastness shown by sulphur black or aniline black, and this is especially true with regard to scouring. When a sample of cotton yarn or cloth dyed with developed black is plaited with a piece of white cotton and scoured in a warm solution of soap a considerable amount of the color will bleed off, staining both the soap liquor and the white cotton. Depending on the particular dyestuff employed for producing the developed black and on the careful manner in which it is dyed, this bleeding will be more or less emphasized; but under no circumstances will any developed black show perfect freedom from bleeding in the scouring test. Sulphur black and aniline black, if properly dyed, will show no staining when scoured with a hot dilute soap solution. Logwood black will nearly always show some degree of bleeding, unless very special precautions have been taken in the dyeing; but this black responds very nicely to another distinctive test, so that the scouring test need not be depended on in this case. A substantive or direct black will bleed copiously when scoured; but it will also bleed to a considerable extent when steeped in warm water without the presence of soap.

The solution of soap for the scouring test can be easily prepared by dissolving about 35 grains of a neutral soap (such as Ivory soap, for instance) in a pint of water. The sample to be tested, consisting of the black dyed material mixed with the white cotton, is placed in a small cup and well covered with the soap solution. This is then heated almost to the boiling point, and allowed to stand for half an hour, without further heating. A direct dye will almost immediately show considerable bleeding, but a developed dye will not give any degree of bleeding for some little time. Sulphur and aniline blacks will not bleed at all. This test is a simple one and with a little experience one can readily detect a developed black. There are, however, more definite and accurate tests for this purpose, and it may be of interest to give them, although, as a rule, it will require some degree of chemical knowledge and experience to properly apply and judge them.

There are a number of tests which may be employed to distinguish between the different varieties of black to be found on cotton goods, and among these the following are the most important:

1, The sulphuric acid test: A solution is prepared containing one part of sulphuric acid to 100 parts of water. A small sample of the material to be tested is boiled with this sulphuric acid for five minutes, then

washed in fresh water. (a) If the color of the fiber is changed to brown and the solution becomes orange or yellowish, it indicates that the sample has been dyed with logwood black. (b) If the fiber is changed to a blue color, while the solution becomes orange or yellowish, it indicates that the sample has been dyed with a direct blue and topped with logwood black. (c) If the fiber still remains black in color, but the solution becomes reddish brown, it indicates the presence either aniline black alone or in combination with sulphur black or a direct black, or the use of a direct black topped with logwood black; to discriminate between these a further test will be necessary, as below. (d) If the fiber remains black and the solution colorless or almost so, it indicates the presence of sulphur black, direct black, or developed black, and a further test will be necessary to discriminate between these. To further determine the exact black which may have been employed under test (c), it will be necessary to test a fresh sample of the dyed material with a 10 per cent. solution of stannous chloride (tin salt), boiling for about five minutes. (e) If the fiber becomes bluish black while the solution acquires a violet color, it indicates the use of a direct black topped with logwood-iron black; that is to say the cotton has first been dyed with a direct black, and then further dyed with logwood in connection with an iron mordant. (f) If the fiber remains black and the solution colorless, it indicates the use of aniline black. To further determine the exact black which may have been employed under the test (d), a fresh sample of the dyed material is boiled for five minutes in a 20 per cent. solution of sodium sulphide, washed in fresh water, and dried. (g) If the fiber is turned to only a slightly bluish black, while the solution becomes a clear greenish or olive color, it indicates the presence of sulphur black. (h) If the fiber is largely stripped of its color and becomes either bluish or brownish grey, while the solution becomes strongly colored to a brown or red, it indicates the use of either a direct black or a developed black. These two may be further distinguished by boiling a fresh sample of the dyed material for five minutes with a 10 per cent. solution of soda ash, and washing. (i) If the fiber is considerably stripped and changes to a pale bluish black while the solution becomes colored a dull violet or brown, it indicates the use of a direct black; but (j) if the solution remains almost colorless, it indicates the use of developed black.

2, The hydrosulphite test: A solution is prepared containing 10 parts of Hyraldite (or other hydrosulphite compounds such as Hydrosulphite N F or Reducite, etc., may be used) and 100 parts of water, to which is added a few drops of strong acetic acid. A small sample of the material to be tested is boiled in this solution for about three minutes, then washed with cold water; then further subjected to the action of a cold 10 per cent. solution of chrome, and finally washed in fresh water. (a) If the fiber becomes stripped of its color, and the treatment with chrome is without effect, the color may have been dyed with logwood, direct black, or developed black. To discriminate between these boil a fresh sample of the dyed material for five minutes in a 10 per cent. solution of soda ash, and wash in cold water. (b) If the solution remains colorless or only slightly stained while the fiber remains black, it indicates the presence of developed black. (c) If the fiber remains black but the solution becomes strongly stained, it indicates either logwood black or direct black. To distinguish between these, boil a fresh sample of the dyed material with a 20 per cent. solution of sodium sulphide for five minutes, and wash and dry. (d) If the fiber becomes largely stripped to a reddish grey while the solution acquires a greenish black color, it indicates the presence of logwood black. (e) If the fiber becomes largely stripped to a bluish grey while the solution acquires a brownish color, it indicates the presence of a direct black. (f) If in the original test with the hydrosulphite and chrome solutions the color is at first largely stripped from the fiber to an olive brown while the solution is yellowish, but the black color is brought back by the treatment with chrome, it indicates the presence of sulphur black. (g) But if the hydrosulphite solution has no effect on the color or turns it only slightly brown, while the solution remains colorless, and the

# *Dyeing, Bleaching, Printing, Etc.*

## TO DETERMINE WHETHER COTTON HAS BEEN DYED WITH A DEVELOPED BLACK.

*BY J. MERRITT MATTHEWS, PH D.*

In the dyeing of black on cotton a wide variety of products may be employed; as a result there may be a great variation in the tone and general character of black dyed cotton, as well as much difference in the fastness and value of the color. The principal blacks to be met with on cotton at the present day may be summarized as follows:

1. Logwood Black.
2. Substantive or Direct Black.
3. Developed Black.
4. Sulphur Black.
5. Aniline Black.

These include practically all of the different classes of black dyeings which are liable to be met with ordinarily on cotton. There are some other dyeings which may be employed to give a black color on cotton, such as iron tannate black, combinations of basic dyes to give black, and even black obtained with Indanthrene or vat colors; but such blacks would be more or less curiosities in practical dyeing at the present time, and it would be a useless encumbrance to bring these into the consideration of the question.

Developed Black is especially desirable on account of its beautiful tone or quality of color; it furnishes a "bloom" which is very pleasing to the eye. Although of sufficient fastness for most purposes, nevertheless it does not possess the high degree of fastness shown by sulphur black or aniline black, and this is especially true with regard to scouring. When a sample of cotton yarn or cloth dyed with developed black is plaited with a piece of white cotton and scoured in a warm solution of soap a considerable amount of the color will bleed off, staining both the soap liquor and the white cotton. Depending on the particular dyestuff employed for producing the developed black and on the careful manner in which it is dyed, this bleeding will be more or less emphasized; but under no circumstances will any developed black show perfect freedom from bleeding in the scouring test. Sulphur black and aniline black, if properly dyed, will show no staining when scoured with a hot dilute soap solution. Logwood black will nearly always show some degree of bleeding, unless very special precautions have been taken in the dyeing; but this black responds very nicely to another distinctive test, so that the scouring test need not be depended on in this case. A substantive or direct black will bleed copiously when scoured; but it will also bleed to a considerable extent when steeped in warm water without the presence of soap.

The solution of soap for the scouring test can be easily prepared by dissolving about 35 grains of a neutral soap (such as Ivory soap, for instance) in a pint of water. The sample to be tested, consisting of the black dyed material mixed with the white cotton, is placed in a small cup and well covered with the soap solution. This is then heated almost to the boiling point, and allowed to stand for half an hour, without further heating. A direct dye will almost immediately show considerable bleeding, but a developed dye will not give any degree of bleeding for some little time. Sulphur and aniline blacks will not bleed at all. This test is a simple one and with a little experience one can readily detect a developed black. There are, however, more definite and accurate tests for this purpose, and it may be of interest to give them, although, as a rule, it will require some degree of chemical knowledge and experience to properly apply and judge them.

There are a number of tests which may be employed to distinguish between the different varieties of black to be found on cotton goods, and among these the following are the most important:

1, The sulphuric acid test: A solution is prepared containing one part of sulphuric acid to 100 parts of water. A small sample of the material to be tested is boiled with this sulphuric acid for five minutes, then

washed in fresh water. (a) If the color of the fiber is changed to brown and the solution becomes orange or yellowish, it indicates that the sample has been dyed with logwood black. (b) If the fiber is changed to a blue color, while the solution becomes orange or yellowish, it indicates that the sample has been dyed with a direct blue and topped with logwood black. (c) If the fiber still remains black in color, but the solution becomes reddish brown, it indicates the presence either aniline black alone or in combination with sulphur black or a direct black, or the use of a direct black topped with logwood black; to discriminate between these a further test will be necessary, as below. (d) If the fiber remains black and the solution colorless or almost so, it indicates the presence of sulphur black, direct black, or developed black, and a further test will be necessary to discriminate between these. To further determine the exact black which may have been employed under test (c), it will be necessary to test a fresh sample of the dyed material with a 10 per cent. solution of stannous chloride (tin salt), boiling for about five minutes. (e) If the fiber becomes bluish black while the solution acquires a violet color, it indicates the use of a direct black topped with logwood-iron black; that is to say the cotton has first been dyed with a direct black, and then further dyed with logwood in connection with an iron mordant. (f) If the fiber remains black and the solution colorless, it indicates the use of aniline black. To further determine the exact black which may have been employed under the test (d), a fresh sample of the dyed material is boiled for five minutes in a 20 per cent. solution of sodium sulphide, washed in fresh water, and dried. (g) If the fiber is turned to only a slightly bluish black, while the solution becomes a clear greenish or olive color, it indicates the presence of sulphur black. (h) If the fiber is largely stripped of its color and becomes either bluish or brownish grey, while the solution becomes strongly colored to a brown or red, it indicates the use of either a direct black or a developed black. These two may be further distinguished by boiling a fresh sample of the dyed material for five minutes with a 10 per cent. solution of soda ash, and washing. (i) If the fiber is considerably stripped and changes to a pale bluish black while the solution becomes colored a dull violet or brown, it indicates the use of a direct black; but (j) if the solution remains almost colorless, it indicates the use of developed black.

2, The hydrosulphite test: A solution is prepared containing 10 parts of Hyraldite (or other hydrosulphite compounds such as Hydrosulphite N F or Reducite, etc., may be used) and 100 parts of water, to which is added a few drops of strong acetic acid. A small sample of the material to be tested is boiled in this solution for about three minutes, then washed with cold water; then further subjected to the action of a cold 10 per cent. solution of chrome, and finally washed in fresh water. (a) If the fiber becomes stripped of its color, and the treatment with chrome is without effect, the color may have been dyed with logwood, direct black, or developed black. To discriminate between these boil a fresh sample of the dyed material for five minutes in a 10 per cent. solution of soda ash, and wash in cold water. (b) If the solution remains colorless or only slightly stained while the fiber remains black, it indicates the presence of developed black. (c) If the fiber remains black but the solution becomes strongly stained, it indicates either logwood black or direct black. To distinguish between these, boil a fresh sample of the dyed material with a 20 per cent. solution of sodium sulphide for five minutes, and wash and dry. (d) If the fiber becomes largely stripped to a reddish grey while the solution acquires a greenish black color, it indicates the presence of logwood black. (e) If the fiber becomes largely stripped to a bluish grey while the solution acquires a brownish color, it indicates the presence of a direct black. (f) If in the original test with the hydrosulphite and chrome solutions the color is at first largely stripped from the fiber to an olive brown while the solution is yellowish, but the black color is brought back by the treatment with chrome, it indicates the presence of sulphur black. (g) But if the hydrosulphite solution has no effect on the color or turns it only slightly brown, while the solution remains colorless, and the

after treatment with the chrome solution brings back the full black color to the fiber, then the presence of aniline black is indicated.

To distinguish between Developed Black and Direct Black: A sample of the dyed material is boiled for five minutes in a 10 per cent. solution of soda ash, then washed with cold water. If a direct black the fiber will be stripped to a considerable extent and will be left a weak bluish black or grey, while the solution will acquire greyish or brownish violet color of considerable intensity. If a developed black, the fiber will not be stripped to any appreciable extent, but will remain a full black color, while the solution should be only slightly colored to a reddish brown tint.

To distinguish between Developed Black and Logwood Black: A sample of the dyed material is steeped for about 30 minutes in a little cold strong sulphuric acid. The acid together with the sample is poured into some cold water, stirred slightly, then allowed to stand for about 30 minutes. If the sample has been dyed with logwood black the solution will show a clear orange brown color with but a slight precipitate, and the fiber will also be of an orange brown color. If a developed black, the solution will be colorless and have a brownish or violet black precipitate, while the fiber will remain black.

To distinguish between Developed Black and Sulphur Black: (1) A small sample of the dyed material is twisted with some white cotton and boiled for five minutes in a dilute solution of neutral soap (35 grains of Ivory soap per pint), then allowed to stand without further heating in the solution for 30 minutes. If a sulphur black has been used the solution will remain practically colorless and the white cotton will not be stained. In some cases in dyeing suphur black where the material has not been properly washed after dyeing this treatment with soap will remove some color, but the white cotton should not be stained; it is on this account that the white cotton is employed in the test. If a developed black has been used the solution will be very noticeably colored a dull violet while the white cotton will be slightly stained. (2) A small sample of the dyed material is boiled for five minutes with a 10 per cent. solution of stannous chloride (tin salt) to which a few drops of hydrochloric acid have been added, then washed with fresh water. Any change in color is noted and then the sample is steeped in a cold 10 per cent. solution of chrome, and then washed again. If sulphur black has been used the sample will be considerably stripped by the treatment with the first solution, becoming a dull yellowish brown, while the solution remains almost colorless; but on treatment with the chrome solution and washing the sample quickly turns black again. If a developed black has been used the treatment with the tin solution almost completely strips the sample, leaving only a pale brown color and the solution acquires also a brownish color. The further treatment with the chrome solution does not restore the color to the fiber.

To distinguish between Developed Black and Aniline Black: A small sample of the dyed material is boiled for a few minutes with a 10 per cent. solution of Hyraldite to which a few drops of acetic acid have been added, then washed in cold water. If aniline black has been used the sample is but slightly changed, at most becoming turned to a brownish black, and the solution remains colorless. If developed black has been used, the sample is practically stripped of all color and the solution becomes yellow.

Sometimes a considerable degree of complexity will be introduced into this question of determining whether a developed black has been used or not by the practice of dyers at times employing a mixed black; that is to say, cotton may be dyed with a direct black as a bottom and then finished off or topped with logwood black; or a direct black bottom may be topped off with aniline black; or a direct black may be after-treated with certain metallic salts, such as chrome or bluestone, to yield a faster color; or a sulphur black may be topped off with aniline black, or it may be shaded by topping with Methylene Blue, which is a basic color. These modifications introduce certain difficulties into the problem which will necessitate the services of a good textile chemist to satisfactorily

solve. The chief problem, however, which is ever liable to arise in ordinary practice in this connection is to distinguish between a direct black which has been "fixed" with metallic salts as an after-treatment and a developed black. These two colors in general yield reactions which are very similar, and by the ordinary methods it is almost impossible to distinguish between them without a very considerable experience in the matter. Consequently, for purposes of an accurate test, it will be necessary to conduct a chemical examination on the samples to determine the presence of copper salts or chrome. For this purpose 10 grams of the sample should be ignited to a complete ash in a porcelain crucible, and the ash so obtained examined in the following manner:

(1) For copper: A portion of the ash is placed in a test-tube and boiled with a little pure nitric acid by which it will mostly be dissolved; dilute with some distilled water, and filter from any undissolved residue. The acid solution is then evaporated almost to dryness to get rid of the excess of nitric acid, and the residue is dissolved in some distilled water. A portion of this clear solution is placed in a test-tube and a slight excess of ammonia water is added. If copper salts are present the solution will acquire a fine blue color. Another portion of the clear solution is placed in a second test-tube and a clean, bright piece of iron wire is placed in the liquid. If copper salts are present, in a short time the iron wire will become coated with a bright deposit of metallic copper.

(2) For chrome: Another portion of the ash obtained from the ignition of the sample is mixed with some sodium peroxide and placed in a crucible and fused with a strong heat. The fused mass is then allowed to cool, powdered up and dissolved in a little distilled water. If chrome is present the solution will show a yellow color. The solution is filtered from any insoluble matter, and the clear solution is placed in a test-tube; a slight excess of acetic acid is added, followed by the addition of a few drops of lead acetate solution. A very characteristic yellow precipitate of chromate of lead will be formed if chrome is present.

## TESTS FOR WOOLEN KHAKI.

*BY DR. LOUIS J. MATOS.*

The woolen dyer will be interested in the government specifications for the olive-drab covert cloths and kerseys, which in so far as relates to the color and tests, are as follows:

Color—Take a mixture of an olive-drab shade, as represented by the sealed standard sample. The various colors required to form this mixture may be dyed in the wool, slubbing, or top, as desired, and to be reasonably clean before mixing. The colors must be sufficiently fast to withstand milling, perspiration, and climatic influences, such as sunlight, air, and exposure incident to the military service.

Tests—All deliveries shall be subjected to the following official tests, chemical and otherwise:

(a)—Boiling for ten minutes in a solution composed of 80 grains of Ivory soap to one pint of water.

(b)—Boiling for ten minutes in a solution containing 10 grains of dry carbonate of soda to one pint of water.

(c)—To stand an exposure of the weather (roof test) for 30 days.

(d)—Soak for 24 hours in lactic acid, specific gravity 1.21 U. S. P. Temperature about 70° F.

(e)—Soak for 24 hours in a solution composed of 3 drams (avoirdupois) of citric acid to 2 fluid ounces of water. Temperature about 70° F.

To correctly judge results the specimens that have been subjected to the above acid tests must be washed with soap in warm water. In all these tests no greater changes of color must take place than would be shown under similar tests made on the sealed standard sample.

The regulation size of the above samples shall be six (6) by four (4) inches. In making tests "d" and "e" the samples shall be placed in a tray or vessel of such a character that will allow them to lie flat within, so that they may be completely immersed in their respective solutions.

These tests appear to be thorough and to the point, and if carefully made cannot fail to be both instructive and profitable. Their consideration will lead the dyer to use his knowledge of the properties of dyes, and if he makes these tests upon the separate shades of black and olive drab, and their components, he will, by elimination, secure a small group of fast dyes to work with advantageously.

One thing must always be given consideration in dyeing cotton fabrics with mineral salts in solution, and that is, the longer the immersion, the more thorough the penetration. This applies not only to the first treatment with the metallic salts, but to the soda baths and to the final washing. If washing

is not thorough and complete, the dyer can have no certainty as to the fastness of his colors when subjected to the tests provided by the government, which are sufficiently hard to keep out imperfectly dyed and finished goods.

As a matter of fact, there is a very wide and open field for skilled dyers of khaki upon cotton, but it requires considerable time and patience to become skilled in the dyeing of such an exacting shade to withstand the harsh treatment it receives in actual service.

## CLOTH FINISHING.

*BY J. R. HIRST.*

(Before the Huddersfield Technical College.)

(Continued from March.)

If it be of good quality and not made very hard, and required to show the design when finished, it will prboably go without putting in a milling machine at all, but will do with running a little extra in soap lather or warm water. If you find it is not covered sufficiently after dyeing, or heavy enough, it is much better to put it in a scouring machine and run a little in warm water than milling the piece in white, and finding after dyeing a blear-eyed, boardy piece, which no amount of brushing and cutting, etc., will make a nice piece. If the piece is well made, by all means mill it in the white, because a piece will always mill better before being boiled in the dye-pan than after. If the piece is well made and hard, and does not cover in milling, it will perhaps be wisest to raise on the back before milling, to soften, and a little on the face to get it to cover better in the milling. This work is done preferably on the Mozer machine, as it gives it a fuller bottom, and does not rob the cloth like the teazle gig. I do not like raising at all on the face if the cover can be got without getting the piece too heavy and firm, for the reason that it gives the cloth a rougher appearance when finished, and does not lay the wool so flat and even. It will also wear up rough and woolly much sooner. In raising, the wool fibers are torn from the threads, and caused to stand on the top, and in milling these fibers get matted together and not properly fastened in the body of the cloth, hence they are soon rubbed up, which is a common complaint from customer of covered finished worsteds. Keep on the under-side when milling so as to allow for going up in washing off after milling. Give plenty of clean warm water, with a little ammonia. After drying, have the piece looked over by menders for anything they may have missed, then blow or boil, whichever suits the piece best. After dyeing and tentering have the piece steamed and brushed, match to pattern and cut exact to pattern, burl, then blow or boil. or both. If it is a fine made piece with plenty of warp on face, I should say boil at about 150° F.; if it is a loose or open pattern, blow. Blowing puts more condition on, and makes the piece handle somewhat firmer than boiling, unless you boil at a high temperature. To further improve the handle, run 45 minutes in Fuller's earth in an open washer, steam and brush after drying, match to pattern, as you will find a piece will look different after this process, run through the cutting machine to take off what has been rubbed up in going through these processes, damp and press as with fancies.

Sometimes we have a piece that needs a little more cover than we get with scouring, and should handle a little firmer and fuller. I should advise putting it in the stocks 10 or 15 minutes. You can watch it better in the stocks than milling machine, as the stocks mill slower. Pieces that are hard and boardy will be improved by being run about 20 minutes in the stocks after scouring. Time is an important factor in finishing. If a piece is allowed plenty of time to rest after each process, it will come out much better than one which is rushed.

There are about 53 mills in Edinburgh, Scotland, employing about 12,500 workers, which produced 12,000,000 yards of woolen and worsted cloth in 1910, requiring 18,000,000 lbs. of clean wool.

The number of cotton spindles in Russia increased from 7,500,000 in 1900 to 8,250,000 in 1910, and the quantity of cotton consumed from 1,350,000 bales in 1900 to 1,457,000 bales in 1910.

## THE VALUATION OF DYERS' MATERIALS.

*BY J. DOBROYD.*

*From the Dyer and Calico Printer.*

This article has been written for dyers who wish to test their own materials, and who have sufficient knowledge of chemical manipulation to make practical tests without being trained analysts. With this object in view, the methods chosen are the simplest and most direct, while scientific nomenclature is discarded as much as possible in favor of common terms and simplicity. In addition to a description of the system of testing, the probable adulterants will also be mentioned, together with the means for detecting their presence. This will involve diagrams of apparatus, well known, of course, to the professional analyst, but indispensable in an article that is intended to be instructive. The first and most expensive instrument, and one which is absolutely indispensable, is the balance.

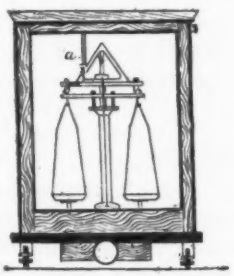



FIG. 1.

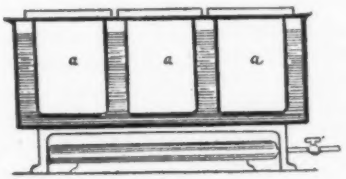



FIG. 2.

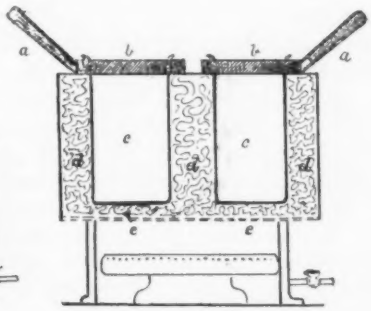



FIG. 3.

### THE BALANCE.

Any sum may be paid for this, from $10 upwards; the very cheap ones are of no use as their lack of sensitiveness makes their results of no value; one sufficiently sensitive for ordinary testing may be purchased for about $35, and a set of accurate gram weights will bring this sum up to $42. The type shown in Fig. 1 is well adapted for dye analysis, and is sensitive to half a milligram. The details of the balance are too well known to require dealing with here, it being sufficient to say that it should be kept in an air-tight glass case, and have a movable arm at A to adjust the position of the rider on the beam. Very delicate, costly instruments are not to be recommended, as they take up considerably too much time in weighing, owing to the time required to come to rest. One responding to half a milligram is amply sufficient.

A set of dye pans heated by a water bath is also an essential; the usual shape of these is seen in the sectional diagram, Fig. 2. These pots, which are commonly earthenware, have a capacity of one litre, and the heating bath may be water, brine, glycerine or oil. If water alone is used, the pots themselves never reach actual boiling point, a matter which is really of not so much importance, as the dyer's vessel, when heated by blown steam, is always short of the actual boil. A strong solution of calcium chloride enables the boiling point to be reached, but this has a most corrosive action upon copper, and common brine, which does not reach the temperature of calcium, is generally preferred. Glycerine, when heated, decomposes and gives off irritating fumes, and fatty oils have the drawback of forming dangerous explosive mixtures with water, the water sinking below the oil and exploding with high disruptive force so soon as its boiling point is reached.

### HOT-AIR BATH.

In place of water or oil baths the system shown in Fig. 3 is preferable; this is free from heated liquids in the surrounding shell, being simply a hot-air bath. In the figure,

CC, are porcelain jars having a loose copper collar at B, to which is fixed a wooden handle, A. This enables the jars to be handled comfortably while hot, and the copper bath in which they dip has its spaces, DDD, filled with asbestos wool. At the base over the gas jets is a perforated iron plate, EE, which allows the heated air to percolate between the asbestos fibers, effectually doing away with a heated fluid envelope. In spite of tintometers and all the various optical instruments for measuring color strengths, comparative dye trials are yet the best means for obtaining the color value of a dye, and can be made valuable as references if the dyed samples are tabulated and kept away from the light. Cotton and wool yarn is generally preferred to either of the two in fabric form for dye trials, chiefly because of the ease with which any desired weight can be got by measuring off a certain number of feet or yards, the initial weight of any definite number of yards giving the proportionate weight of lesser lengths. Yarns of different counts cannot be used for comparative tests, nor should different qualities of wool be used, as the area of fiber surface varies greatly. It is always advisable to keep, say, twenty or thirty pounds of scoured yarn for these tests, and if stored in a dry place away from heat and light it should keep for years.

In judging the depth of color produced by the same percentage of different samples, the shade must be kept very light; for example, not more than 1/8 to 1/2 per cent. of aniline colors and 4 to 5 per cent. of wood extracts. Weighing such small percentages on, say, a 5 gram sample of yarn is out of the question, as the slightest discrepancy in weighing would throw the figures a long way out; even the very minute weight of color necessary to overcome the inertia of the balance would be multiplied many times over in dealing with such small amounts. To get over this, 0.5 grams of the dye sample are carefully weighed out and dissolved in hot water, the bulk of liquor being then made up to one liter in a graduated flask. Each cubic centimetre of this solution will now contain 0.0005 grams of color, so that small percentages may easily and accurately be measured off by means of a burette. With acid dyes upon wool an addition of 20 per cent. Glauber's salt and 4 per cent. sulphuric acid should be added. Both these bodies may be conveniently kept in standard solutions, say, of 20 per cent. strength, so that any weight can be quickly measured off without the trouble of weighing. The yarn and dye should be entered at 120° F. and gently brought up to the boil in half an hour, then dyed for a further 30 minutes at a gentle simmer and the yarn taken out, squeezed and washed.

### THE STRENGTH IN FIGURE VALUES.

To obtain this, the yarn, after washing, is dried and compared for depth of shade, the darkest sample being set aside as a standard to judge the others by. The lighter skeins are now replaced in their respective baths, and a further measured portion of dye added and the boiling continued until the shade of the darkest is reached. This may entail two or more additions of dye before the shade is reached, and a careful record must be kept of all these, while the baths must not be allowed to concentrate by evaporation, but should be kept up to an exact volume by the addition of boiling water. No further additions of the assistants need be made, as these would then tend to upset the dyeings; the only loss with the acid and Glauber's salt is what the yarn carries out of the bath, mechanically, when lifted. Naturally, for the results to be of any value the baths should exhaust, but comparative values may be got even with dyes which do not, providing time and temperatures are kept alike. After dyeing all the samples up to the shade of No. 1 (the darkest), the values are then inversely proportionate to the amount of dye required to obtain the shade, and if say four samples took, respectively, 65, 72, 79 and 83 c.c. of dye to reach the same shade, then, taking No. 1 as 100, the individual values of each are only a matter of simple calculation.

(To be continued.)

---

The annual imports of textiles to Argentina average over $50,000,000, classified as follows: Cotton, $32,579,535; wool, $10,806,453; silk, $5,046,110; jute, linen, etc., $9,394,271.

### Black on Ostrich Feathers.

*Editor Textile World Record:*

Can you give me a good formula for dyeing logwood black on ostrich feathers?

Dyer (1902).

A good black depends largely upon the quality of the feathers and the treatment they receive preparatory to dyeing. Before dyeing the feathers should be thoroughly cleaned in lukewarm water, with soda, ammonia, or soap. While ostrich feathers will stand considerable treatment they should be manipulated with great care in order to preserve the natural luster of the flues. A good black is largely a matter of trial. The following process gives good results: After the feathers have been thoroughly cleaned, bottom them in a strong decoction of tumeric, until they have taken on a good, deep yellow. Lift them, rinse and immerse them for several hours, or preferably over night, in a bath of pyrolignite of iron of full commercial strength, and at ordinary temperature. From this bath the feathers are lifted, rinsed, and laid down for several hours in a strong logwood decoction prepared preferably from fresh, well-seasoned chips. As hardly any two feathers dye exactly alike, they should be carefully watched after they have been in the logwood bath for an hour or so in order that the feathers that first come to the full shade should be removed, allowing those that take the dye less rapidly to have a longer time in the bath. After dyeing they are lifted, rinsed thoroughly, dried and beaten out with starch.

An article on feather dyeing giving several processes for blacks and colors will follow at an early date.

Beta Naphthol.

# *Dye Recipes*

**The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.**

Recipe No. 65.

### Red on Cotton Yarn.

Racine Scarlet 3 D on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Racine Scarlet 3 D.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
25 lbs. Common Salt.
2 lbs. Sovereign Soda F. E. A.

Dye at a boil for one hour.

Racine Scarlet 3 D can be used to advantage in the dyeing of union goods as it dyes wool and cotton a very satisfactory shade in a one-bath process.

Recipe No. 66.

### Blue on Cotton Yarn.

Tetrazo Fast Blue 2 B on 100 lbs. cotton yarn. Prepare the dye bath with

1 lb. Tetrazo Fast Blue 2 B.
(American Dyewood Co., 84 William St., N. Y.)
30 lbs. Common Salt.

Raise the bath to a boil and dye at a boil for one hour. Rinse and enter into the cold diazotizing bath made up with

3 lbs. Nitrite of Soda.
7 lbs. Muriatic Acid.

Work in this bath for 15 minutes. Then rinse. Work in a cold developing bath for 15 minutes made up with

1 lb. Beta Naphthol.
1 lb. Caustic Soda.

Then wash thoroughly.

Tetrazo Fast Blue 2 B is recommended on account of its excellent fastness to chlorine.

Recipe No. 67.

### Black on Worsted Yarn.

Palatine Chrome Black C S K on 100 lbs. worsted yarn. Prepare the dye bath with

6 lbs. Palatine Chrome Black C S K,
(Badische Company, 123 Doane St., N. Y.)

previously dissolved and added to the dye bath and the material entered not above 120° F. The bath is then slowly heated to a boil with nothing but the dyestuff, and after the material has been dyed at a boil for 3/4 of an hour, add

2 lbs. Sulphuric Acid,

and continue the boiling 3/4 of an hour longer. Then add

2 lbs. Potassium Bichromate,

and continue the boiling for from 1/2 to 3/4 of an hour.

Palatine Chrome Black C S K will be found to be a good acid black for general purposes.

Recipe No. 68.

### Compound Shade on Cotton Yarn.

Tetrazo Chlorine Brown R Conc. and Tetrazo Fast Blue 2 B on 100 lbs. cotton yarn. Prepare the dye bath with

1 lb. 9½ ozs. Tetrazo Chlorine Brown R Conc.
6½ ozs. Tetrazo Fast Blue 2 B.
(American Dyewood Co., 84 William St., N. Y.)
30 lbs. Common Salt.

Raise to a boil in ten minutes and dye at a boil for one hour. Rinse and diazotize by working for 15 minutes in a cold bath made up with

3 lbs. Nitrite of Soda.
7 lbs. Muriatic Acid.

Rinse and work in a cold developing bath made up with

1 lb. Beta Naphthol.
1 lb. Caustic Soda.

Work in this for twenty minutes, and then wash thoroughly. These colors possess excellent fastness to chlorine.

---

Recipe No. 69.

**Garnet on Cotton Yarn.**

Direct Garnet on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Direct Garnet
(E. M. Thayer & Co., 411 Atlantic Ave., Boston.)
20 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Direct Garnet possesses the properties characteristic of the direct cotton colors, and is very useful for shading purposes, dyeing very level in combination with any substantive color.

---

Recipe No. 70.

**Violet on Worsted Yarn.**

Chrome Fast Violet 3 B on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Chrome Fast Violet 3 B.
(Berlin Aniline Works, 213 Water St., N. Y.)
20 lbs. Glauber's Salt.
2 lbs. Sulphuric Acid.

Enter at 120° F. and raise to a boil during 3/4 of an hour and boil for 3/4 of an hour. If after this time the bath is not sufficiently exhausted, add

1 lb. Sulphuric Acid,

and boil for 1/2 hour longer. Then add

1½ lbs. Potassium Bichromate,

and boil for 3/4 of an hour longer.

Chrome Fast Violet 3 B possesses excellent fastness to light and wear.

---

Recipe No. 71.

**Yellow on Cotton Yarn.**

Helindone Yellow 3 G N on 100 lbs. cotton yarn. Prepare the dye bath with

20 lbs. Helindone Yellow 3 G N Paste.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
10 gals. Water.
1¼ gals. Caustic Soda Solution 40° Be.
8 lbs. Hydrosulphite M L B Powder.

Stir well and allow to stand until the reduction is complete, which should occupy 1/4 to 1/2 hour.

Enter the yarn into the bath made up with the above stock solution and water equivalent to 20 times the weight of material to be dyed. Dye at a little over 100° F., until the material is thoroughly penetrated. Then wring, and expose to the air. Then work in a boiling soap bath for 1/2 hour.

Helindone Yellow 3 G N paste possesses remarkable brightness and will be found a useful color for cotton dyeing.

---

Recipe No. 72.

**Violet on Cotton Yarn.**

Thion Violet B Pat. on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Thion Violet B Pat.
(Kalle & Co., 530 Canal St., N. Y.)
3 lbs. Sodium Sulphide.
10 lbs. Common Salt.

Dye at a temperature just below the boil for one hour.

Thion Violet B Pat. possesses extreme fastnesss to washing and milling and good fastness to light.

---

Recipe No. 73.

**Blue on Worsted Yarn.**

Anthra Cyanine 4 R L on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Anthra Cyanine 4 R L.
(Farbenfabriken Co., 66 Lafayette St., N. Y.)
15 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter at 140° F. and dye at a boil for one hour.

Anthra Cyanine 4 R L is easily soluble and penetrates well. It possesses very good fastness to light, and good fastness to alkalies, stoving and steaming, and is valuable for the dyeing of ladies' dress material.

---

Recipe No. 74.

**Scarlet on Cotton Yarn.**

Azerole Fast Scarlet 4 B S on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Azerole Fast Scarlet 4 B S.
(Innis, Speiden & Co., 46 Cliff St., N. Y.)
20 lbs. Common Salt.

Enter at 160° F., raise to a boil and dye at a boil for one hour.

Azerole Fast Scarlet 4 B S is exceptionally fast to acids, light and cross dyeing for a direct cotton color. It also possesses high coloring power.

---

Recipe No. 75.

**Black on Worsted Yarn.**

Palatine Chrome Black C S F on 100 lbs. worsted yarn. Prepare the dye bath with

6 lbs. Palatine Chrome Black C S F.
(Badische Company, 123 Doane St., N. Y.)

previously dissolved and added to the dye bath, and the material entered not above 120° F. The bath is then slowly heated to a boil with nothing but the dyestuff, and after the material has been dyed at a boil for 3/4 of an hour, add

1½ lbs. Sulphuric Acid,

and continue the boiling for 3/4 of an hour longer. Then add

1½ lbs. Potassium Bichromate,

and continue the boiling for from 1/2 to 3/4 of an hour.

Palatine Chrome Black C S F will be found to be a good acid black for general use.

---

Recipe No. 76.

**Brown on Cotton Yarn.**

Sulphur Brown 3 R W on 100 lbs. cotton yarn. Prepare the dye bath with

12 lbs. Sulphur Brown 3 R W.
(Berlin Aniline Works, 213 Water St., N. Y.)
15 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
40 lbs. Glauber's Salt.

Enter at 180° F. and dye at a temperature of 200° F. for one hour.

Sulphur Brown 3 R W will be found to possess the good fastness characteristic of the sulphur colors.

---

Recipe No. 77.

**Olive on Cotton Yarn.**

Thion Olive 2 G on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Thion Olive 2 G.
(Kalle & Co., 530 Canal St., N. Y.)
20 lbs. Sodium Sulphide.
4 lbs. Soda Ash.
20 lbs. Glauber's Salt.

Dye at a temperature just below the boil for one hour.

Thion Olive 2 G possesses good fastness to washing and light.

---

Recipe No. 78.

**Blue Black on Worsted Yarn.**

Anthracene Chromate Blue Black B on 100 lbs. worsted yarn. Prepare the dye bath, at 160° F., with

6 lbs. Anthracene Chromate Blue Black B.
(Cassella Color Co., 182 Front St., N. Y.)

Enter the material and shortly after add

1½ lbs. Potassium Bichromate,
4 lbs. Magnesium Sulphate,

when using soft water. The material should be kept at a temperature of 160° to 180° F. for 1/4 of an hour, then raised to a boil and dyed at a boil for from 1 1/2 to 2 hours. After the boiling has continued for one hour add

3 lbs. Acetic Acid,

in order to exhaust the dye bath.

Anthracene Chromate Blue Black B possesses excellent fastness to light, washing and milling and all of the ordinary color-destroying agencies.

---

Recipe No. 79.

**Violet on Worsted Yarn.**

Phenylene Violet 4 R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Phenylene Violet 4 R.
(W. F. Sykes & Co., 85 Water St., N. Y.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 160° F. and dye at a boil for one hour.

Phenylene Violet 4 R gives a bright reddish violet shade which has proved to be valuable in combination with Phenylene Yellow 3 G in the production of the prevailing fashionable shades.

---

Recipe No. 80.

**Green on Cotton Yarn.**

Meridan Green on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Meridan Green.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
25 lbs. Common Salt.

Dye at a boil for one hour.

Meridan Green can be used to advantage in the dyeing of union goods, as it dyes wool and cotton a very satisfactory shade in a one-bath process.

# *New Machinery and Processes*

**This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.**

**Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.**

**We invite machine builders and others to send us such information for this department.**

**Fiber Spool.** The United States Fiber Products Co., 831 Manton Ave., Providence, R. I. An improved mill spool made with fiber heads which are screwed to the barrel and so constructed as to be readily taken apart for repairs. A description appears in this issue.

**Boardless Cloth Winder.** The Boardless Cloth Winding Co., Box 725, Lawrence, Mass. A system of winding cloth without the use of boards, which is described in this issue.

**Shuttle Changer.** August Regal, Jagerndorf, Silesia, Austria. An improved mechanism for changing shuttles in automatic looms. It is being developed in one of the cotton mills of Austrian Silesia.

**Woolen Condenser.** The Werdauer Textilwerke, Langhessen, Germany. An improved card condenser built on the Bolette system.

**Beaming and Warping Machine.** Lightowler & Keighley, Bradford, Eng. A combined warping and beaming machine for woolen and worsted. The warping reel and the beam are driven from the same friction disc.

**Printing Machine.** Pickup & Knowles, Manchester, England. An improved six-color printing machine for scarves, window blinds, etc. It embodies a number of important improvements.

**Thread Extractor.** William Tatham & Co., Rochdale, England. A machine for treating carding and spinning room sweepings, the roller laps and other yarn waste containing more or less hard end.

**Roller Covering Attachment.** Dronsfield Bros., Oldham, England, have recently adopted for their roller covering machine a patent "solderless" pulling-on spring by which the frequent breakages of wires are prevented.

**Humidifying Apparatus.** George Keighley, Ltd., Burnley, England. An improved apparatus for moistening warps in the loom. It is said to be both simple in construction and effective in operation.

**Doffing Motion.** James F. Low & Co., Montifieth, N. B. A doffing motion adapted for the flyer type of spindle.

**Dobby Motion.** Ward Bros., Blackburn, England. An improved cross border dobby which can be adapted to any Keighley type of loom.

**Cotton Picker.** Richard Hartmann, Chemnitz, Germany. An improved cotton picker in which several improvements are embodied.

**Scouring Machine.** Ritterhaus & Blecher, Barmen, Germany. A machine for soaping and scouring piece goods in the open width. Simplicity of construction, efficiency and a large production are among the claims.

**Removing Dust.** Thos. Gregson, Lancashire, England. An improved system of removing dust from card rooms.

**Card Locking Device.** F. Lord, Burnley, England. A device for securing the doors of carding machine covers. It is worked by contact with the grooved pulley on the cylinder shaft.

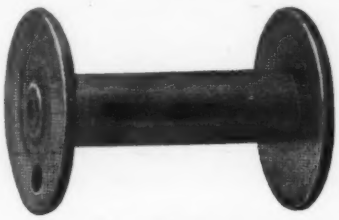
**Napper.** Fr. Gebauer, Berlin, Germany. An improved type of the Gebauer napping machine which has been introduced into a number of German mills and given excellent results both as to the quality and quantity of work.

## INTERCHANGEABLE FIBER HEAD SPOOLS.

The illustration shown on this page represents the Evans interchangeable fiber head spool manufactured by the United States Fiber Products Co., 831 Manton Ave., Providence, R. I., for which patents have recently been granted. Notwithstanding the fact that it has been on the market but a short time, it is already in a number of representative mills who have given it a most thorough test

FIG. 1. THE SEPARATE PARTS OF THE SPOOL.

and speak of it in the highest terms. They are made with any size head or barrel desired. Fig. 1 shows the separate parts of the spool, including the barrel, two heads and the screws for fastening the heads and barrel together. The head of the screw is bevelled and also has notches which corre-



THE EVANS INTERCHANGEABLE FIBER HEAD SPOOL.

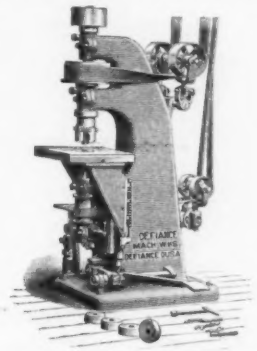
spond with lugs on the spool head. This construction results in securing the head firmly on the barrel when the screw is tightened.

The manufacturers guarantee that it will not warp or split with ordinary usage. The spool can be easily repaired at the mill, a feature that will be greatly appreciated by mill managers. The spools can be shipped knocked down and put together at the mill, where a supply of heads is usually kept on hand, thereby saving space and freight charges. It is claimed that this spool is much stronger than the ordinary wooden spools and effects a marked reduction in cost to the mill.

The United States Fiber Products Company also manufactures solid spools of the same material as that used for the interchangeable spool, the heads being vulcanized fiber with birch barrels and maple bushings. In the solid spools the plugs are glued and consequently the spool is not so easily repaired as is the interchangeable. Samples and further information can be obtained from the manufacturers.

## SPOOL AND BOBBIN DISC CUTTING AND BORING MACHINE.

The illustration shows the improved spool and bobbin disc cutting and boring machine built by the Defiance Machine Works, Defiance, O. It is used for cutting round wooden discs from the plank and boring a



SPOOL AND BOBBIN DISC CUTTING AND BORING MACHINE.

hole in the center, making the heads for spools and bobbins, pulley block wheels, spool tops and other circular forms. It will accommodate work up to 2 1/2 inches in thickness and 14 inches in diameter. The boring attachment can be disconnected when desired.

The table supporting the work, with the boring attachment fitted to it, is provided with a vertical movement by foot treadle to

bring the work up to the cutter head, the operator having both hands free to handle his work, enabling him to cut the discs from the plank to the best advantage, without the loss of stock, and produce about 5,000 medium-iszed discs in ten hours, and other sizes in proportion. The shaping and boring of this work are both performed at the same time.

The construction is such that the discs cannot get stuck in the cutter head. They are held firmly against the table by a plunger until the cutter head is free. Further information can be obtained from the builders.

## A BOARDLESS CLOTH WINDER.

A new device for winding cloth without the use of boards is being placed on the market by the Boardless Cloth Winding Co., Box 725, Lawrence, Mass. The cloth is

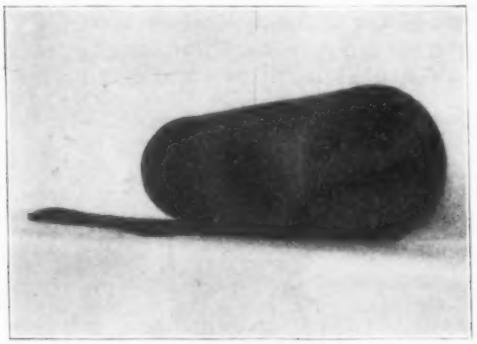


FIG. 1.

wound on two oppositely tapered oval bars which are removed when the piece is wound, leaving the cloth in a solid, compact roll, Fig. 1. The bars can be used indefinitely, thus eliminating the cloth board. The attachment can be applied to any cloth winding machine without extra expense. The claims made for this method are as follows: The cloth is more easily, steadily and evenly rolled. The roll produced is easily handled and makes a neat and compact package. The absence of the cloth board in the center reduced the size of the roll from 3 inches to 6 inches or more in circumference and thus enables a larger quantity of cloth to be packed in a case. Fig. 2 shows a case in which ten pieces of cloth rolled on boards have been packed, while Fig. 3 shows the same case containing eleven pieces of the same weight

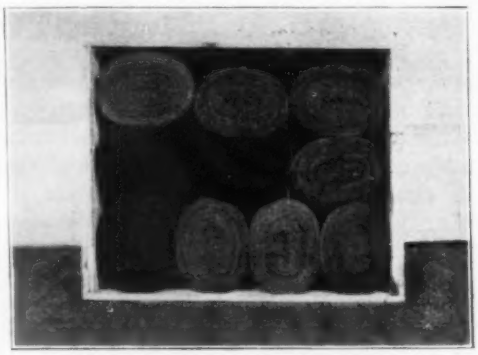


FIG. 2.

and length rolled by the boardless system. By adjusting the size of the case to suit the rolls it has been found that a gain of 15 per cent. in casing can be made. The manufac-

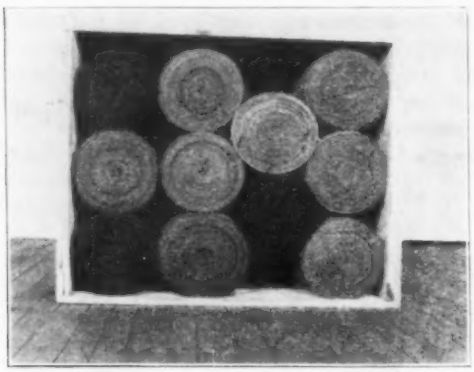


FIG. 3.

turers state that by the boardless system one-half the present cost of boards and cases is saved. In addition it is stated that the inside end of the goods when unwound is found to be in much better condition than when wound on boards.

The declared exports from Bradford to the United States in February amounted to $1,082,571, a decrease of $625,300 from February, 1910, due mainly to smaller wool shipments.

## THE ESCALATOR IN THE TEXTILE MILL.

*BY J. F. SPRINGER.*

The installation of escalators at the Wood Worsted Mills at Lawrence for transporting employes to and from the upper floors is attracting attention in industrial circles from an economic standpoint. Any reasonably economic method of conserving the physical energy of operatives will be reflected in the increased output. A girl that reaches the fourth, fifth or sixth floor of the mill with nerves and muscular energy in a state of full normal efficiency will not have to pass through a more or less prolonged period of recovery necessary if she reaches her machines by the ordinary method of the stairway. Of course, a readiness for full exertion at once will show in the amount of work she is able to do. It will often, no doubt, show in the better quality of the product and in decreased breakages and the like.

Assuming that the conservation of the employe's physical condition is really an economic question, the problem is how to accomplish it in connection with vertical transportation. The problem is not how to get the individual carried at a high rate of speed. It is not important whether the individual is taken up to the fifth floor in 30 seconds or in two minutes; what is of importance is that a large number of employes can be carried in a moderate total of time. It is of importance to perceive this point, to understand fully how the escalator provides an efficient solution. This conveyor of human beings does not flick the individuals up and down at remarkable speed, but it does transport a very large number in a short time. An escalator of ordinary size, used as it would be in a department store, has a capacity capable of a delivery of 10,000 or 12,000 passengers per hour. In industrial use, however, because of the increased crowding permissible, the capacity rises to 18,000 or 20,000 per hour. This means that a single battery of escalators serving, say, the third and fifth floors, would deliver 3,600 or 4,000 operatives to those floors in 12 minutes. Adding two minutes, say, for making the trip, the single battery would land the last

ESCALATOR AT THE WOOD WORSTED MILL, LAWRENCE, MASS.

operative at his destination in a quarter of an hour subsequent to the moment when the first one boarded the apparatus at the bottom.

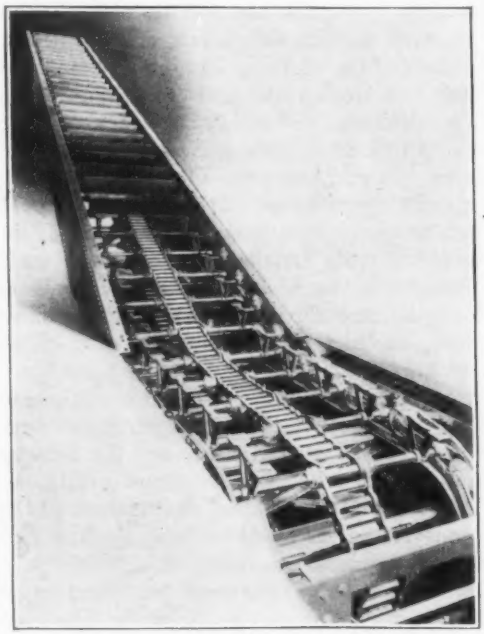
A battery of escalators consists of a line of machines each of which connects two consecutive floors, just as is the case with a line of stairways. Indeed, the escalator very much resembles a stairway. At top and bottom it consists of a moving platform. These extend only for a few feet, say five or six; and merely serve the purpose of facilitating getting on or off. Between these short lengths of moving platform, the escalator is a stairway. It is in motion, but this does not alter the fact that it is really a stairway. However, the passenger is not expected to trouble himself with mounting or descending the steps. He stands on the tread of a step and without any effort of his own is carried either up or down. When but few passengers are aboard, one may, if he chooses, use the escalator as a stairway. He will then add his own effort to that of the machine, with the result of lessening the time of the trip. But this effort is not at all necessary.

The design and mechanical arrangement are such that the stairway character is forever preserved between landings. If one notes the steps near the top and bottom, he will at once see that they differ slightly from the great majority. These terminal steps have the regulation treads, but the risers are of less than normal height. In fact, the moving platform consists of a series of treads all on one level and contacting edge to edge. When the passenger has stepped on, he finds that the tread on which he stands is not only carried forward, but that it soon begins to rise, very gradually at first. The speed of the rise becomes faster and faster until the maximum normal rate is reached. This is then maintained until the upper landing is nearly reached, when the speed of the rise begins to fall off. When it has dropped to zero, the tread has a simple horizontal movement, and has in fact become part of

THE ESCALATOR WITH PASSENGERS.

the upper moving platform. In consequence of the variations in vertical speed, consecutive steps separate vertically more and more or less and less as they pass through the transitional regions. These changes take place slowly and quietly, and do not affect the passenger.

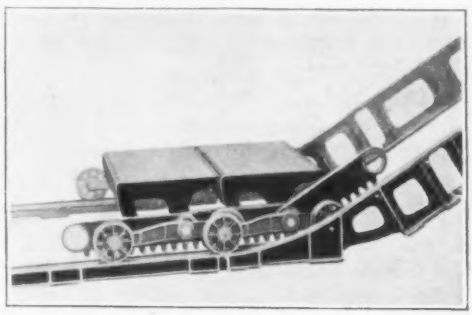
Every step is a special elevator, ordinarily



THE INNER WORKINGS OF AN ESCALATOR.

having a movement which is a combination of horizontal and vertical motions. The tread is, however, always in a horizontal plane, so that the passenger is not required to take up any unusual attitude. He just stands still on a level surface. The tread is the upper surface of what is, to all intents and purposes, a tram car. In fact, each step is provided with four wheels which run on suitable rails. However, there are four separate rails, one for each wheel. That is to say, a step is provided with two wheels at each side or end—that is, on the right and left. These carry between them a bracket which forms part of the support of the step. But these wheels are arranged in different vertical planes. The reasons for this will appear in a moment. In the direction of movement the treads are 18 inches long. But the distance between centers of a pair of wheels is six inches greater. The object is to provide an enlarged base of support for the tread, so that there will be no liability to tipping the little tram car. The arrangement of the brackets and the positions of the wheels are fixed things. It will be seen at once, then, that as the little car goes up the incline with its tread horizontal the rear wheels will need separate supports from those provided for those in front. Here is an important reason for the use of four rails in the track instead of two. On the level, moreover, the wheel bases overlap. The treads are 18 inches long and in contact, while the wheel bases are 24 inches long. The provision of separate rails for a rear wheel of one step and the corresponding forward wheel of the step following enables the wheels to be in different planes and thus avoid entanglements.

The steps derive their impulse from a mas-



TWO ESCALATOR STEPS.

sive chain which binds all those belonging to the escalator into an endless loop. The chain passes over sprocket wheels above and below, the upper one being driven. A long rod runs through the lower part of the step from side to side. This bar passes through the overlapping ends of the shrouds of two consecutive links and forms the connecting pin. As an example of the attention to details in escalator construction, I may be permitted to refer to the manner of avoiding cutting action between the links and this bar. One shroud will be provided with a long

generous bearing for contact with the bar; the cooperating shroud of the next link will not contact with the bar at all, but will be so formed as to have its bearing on the transverse extension of the other shroud.

An important item about an escalator is the moving hand rail. Where the hand would naturally fall, a rail moving with the same speed as the escalator is provided. This prevents the disturbance of one's poise of body. A stationary hand rail grasped by the hand would have a tendency to hold the upper part of the body back. In the view showing empty escalators at the Wood Mill may be seen in the foreground on the left a kind of wall running diagonally across the moving platform. When the escalator is operated downwards, this acts as a shunt to guide the passenger off in case he does not of his own accord step off at one side. At the bottom will be noticed a kind of ribbon. This is a moving band, and is a safety provision to assist in carrying off to one side anything which comes into contact with it. If the current should fail, the escalator is so heavy that its reversal is not to be expected, even though under load. Further, automatic brakes are provided to deal with just such a case.

A full sized escalator, such as those employed in the Wood Mill has a width of step of four feet. The horizontal speed of the platforms can be made to vary. A good, standard speed is, however, 90 feet per minute. In an hour, 5,400 feet of treads will, accordingly, be delivered. As each tread is 1,5 feet, this means 3,600 treads per hour. Allowing but three persons per tread, we have a capacity of 10,800 passengers per hour. At the Wood Mill there are two batteries of escalators. The one serves the fourth and sixth floors; the other, the third and fifth. By referring to one of the photographs, showing escalators unloaded, the general appearance may be judged. To get on board, all one has to do is to step onto the bit of moving platform at the bottom. As the forward movement is only about one-third that of a natural walk, this is a matter of great ease. If one happens to step upon the joint between two treads, it does not matter. The forward tread will rise so slowly that one will, almost automatically, make the slight adjustment of the body necessary. It will be noticed that the photograph shows one or two of the bottom steps with their reduced heights. The face of the riser is slightly convex. It is perfectly smooth even where it joins the tread. The convexity enables the joint with the following tread to be a close one. On the sides, too, the joints are thin. This nicety of adjustment secures the passenger from danger of having the clothing caught or entangled. That the means taken to cover this matter are adequate, the success of the escalator with all kinds of passengers and many thousands of them testifies. One of the first escalators operated was at the Paris Exposition in 1900. A considerable number of department store installations have been made throughout the United States. Prominent examples are the escalators in the Gimbel Store, Philadelphia, the main building of the Greenhut-Siegel Cooper Store and the Macy Store in New York. A very fine equipment is installed in the Henry Siegel Store, Boston. The Elevated Railway and the Subway in New York both make use of escalators. At the great and palatial new station of the Pennsylvania Railroad in New York, a fine escalator provides a means of vertical transportation from a depressed level to that of the street on the 34th Street side. The miscellaneous character of the passengers using the escalator in such installations have given it a very thorough trying-out, both as to the safety of its use and its popularity. At the Manhattan Station of the New York Subway, an up-going and a down-going escalator are in very constant use. Probably 95 per cent. or more of the passengers use the escalators in preference to the stairs. A similar remark may be made as to the up-going escalator at the Pennsylvania Station already mentioned.

Of course, it is the up-going escalator that gives the greater amount of physical relief. If traffic both up and down is to be provided for at the same time, then two sets of escalators will have to be installed. However, the same escalator itself can be run up or

down at will. Now in the application to the handling of employes at industrial plants, advantage can be taken of this fact, because the escalators are in demand in only one direction at a time. Up in the morning and at the close of the noon recess, and down at noon and at the close of the day—these are the industrial requirements. This is presumably the method of operation at the Wood Mill. I am not sure, but judge the practice there is not to use the machines between times. As the method of driving is by the electric motor, economy of power is possible because of the possibility of using it only when wanted. What the operatives think of this method may be judged from one of the pictures where the two batteries are being used in a down-going direction.

When the escalator is not being operated, it can be used as an ordinary stairway. Further, it can be driven at a slower or faster rate at the option of those in control. Escalators, like most of the things of real value, cost something to install. The cost of operation is, however, quite moderate. The question that mill owners have to consider is whether the installation capitalized is capable of yielding suitable returns. The President of the corporation operating the Wood Worsted Mill declares himself well satisfied with the expense incurred by them in putting in their escalator equipment. He regards the increased efficiency of the operatives consequent upon their good physical condition when they begin work at the looms as being in itself sufficient to justify the introduction of escalators. A further point is that the escalator equipment makes the mill a favorite, so that in rush seasons they have the choice of the work people. The installation at this mill consists of eight four-foot machines, arranged in two batteries. These machines are electrically driven. They were installed by the Otis Elevator Co., 17 Battery Place, New York City.

---

The value of cotton manufactures exported from the United States to the Philippines amounted to $2,936,398, as compared with $1,059,042 for 1909.

## A MODEL WEAVE SHED.

The weave shed recently designed and built for the Chicopee Mfg. Co., Chicopee Falls, Mass., is an interesting example of a departure from conventional weave shed design which resulted in low construction costs and high operating efficiency.

Careful studies were made and much thought devoted to the proper location of the building with reference to other parts of the plant and to the handling of raw material and finished product in and out of the shed. Plans were then made looking toward the most effective arrangement of the looms and a building was laid out around them, the column and wall arrangement of which would result in the least possible loss of room. Space was provided for 648 looms with ample aisles, cross passages and room for loomfixers' benches. A coat and toilet room for employes is installed on one side of the shed.

The shed itself is a one-story and basement structure, 253 feet long by 140 feet broad, with a saw-tooth roof supported on 6-inch cast iron columns spaced 27 feet by 34 feet 4 inches on centers. The foundation and basement walls are of monolithic concrete, while the building walls on three sides are of hollow concrete blocks, moulded wet by hand on the ground. The fourth side is of temporary wooden construction, which will readily permit of future extension. The floor of the shed is of 4-inch plank with 1-inch diagonals overlaid with 7/8-inch maple surfacing. It is carried on concrete piers and timber girders.

The roof framing is of steel and supports 3-inch roof planking covered with plastic slate. Practically all natural light comes from the roof, the saw-tooth windows of which are double glazed with ribbed and hammered glass supported on galvanized iron bars. In each panel a half sash is provided hinged at the top with attachment for opening from the floor. Windows are also provided in the north wall, and there are small windows in the gables for ventilation. In openings in the south wall motor-driven exhausters are mounted which amply pro-

vide for ventilation under all conditions of weather. The exhausters are of a capacity sufficient to entirely change the air within the weave shed in fifteen minutes.

Roof drainage is taken care of by wrought iron leaders coming down from the roof inside the building and connecting to a sewer beneath. The drainage has been so designed that in no case is there a greater distance than 18 feet between the beginning of the drainage pitch of the roof and the opening to a leader. All exposed metal work in roof flashings, etc., is of copper giving minimum cost of maintenance.

The use of iron columns and steel framing resulted in wider column spacing than would otherwise have been possible and enabled the building to be designed with a minimum of waste space. There are 6 rows of looms to a bay instead of the conventional four. Owing to the availability and low cost of suitable material, concrete blocks were found to be more economical than brick for the walls and gave the added advantage of a hollow wall.

INTERIOR OF WEAVE SHED LOOKING NORTH SHOWING TEMPORARY WOOD SIDING ON THE EAST.

All shafting is placed in the basement, arranged in two independent groups, each motor driven, the belting connections coming up through the floor.

Heating is done by a system of hot water with forced circulation, and all pipes for this heating system are placed under the windows in the saw-tooth and along the outer walls.

In the design care was taken that all overhead construction, such as girders, roof trusses, etc., should be so placed and of such a character that the lighting would be practically without shadows. All piping was ar-

ranged to follow along the walls or along the girders or trusses, so that with the elimination of overhead piping, shafting and belting the maximum benefit can be had from overhead lighting whether natural or artificial.

WEAVE SHED OF THE CHICOPEE MANUFACTURING CO., VIEW OF NORTH AND WEST WALLS.

VIEW OF THE WEST WALL ROOF FRAMING IN PLACE.

Artificial lighting is provided in the weave room by 195 60-watt, 115-volt Tungsten

lamps, fitted with E-7 clear glass Holophane reflectors.

A number of preliminary experiments were made with different sizes of lamps and with different grouping of the lighting units to determine the intensity and distribution best suited to meet the actual working conditions.

The final determination was to install the lamps in rows 8 feet apart and with the lamps on each row about 20 feet apart, the lamps on adjacent rows being staggered. The lamps were placed 11 feet above the floor.

This arrangement of lamps gives practically a uniform intensity over the entire floor area and the distribution is such as to reduce shadows to a negligible factor; approaching daylight conditions as nearly as practicable.

The basement is lighted by 28 16-c. p. carbon lamps so distributed as to facilitate inspection of the motors and shafting.

Current is supplied from a 550-volt, 40-cycle line and is transformed by a 15-k. w. transformer to the 3-wire, 115-230 volts system.

For fire protection, a complete system of sprinklers is provided.

The humidifying, heating and sprinkling apparatus was installed complete by the G. M. Parks Mfg. Co. of Fitchburg, Mass., and has given excellent satisfaction.

The looms are the standard Northrop pattern, E model, and arranged in two groups each embracing one-half the total equipment. Each group is driven by one 75 h. p. Westinghouse 3-phase, 40-cycle, 550-volt motor located in the basement. One motor is connected to six, the other to seven parallel lines of counters, running lengthwise of the building, hung in the basement from the underside of the loom floor structure, which belts pass up through the floor to the individual looms.

The entire design and construction of the shed and installation of its service equipment was executed by Westinghouse Church Kerr & Co., New York, under the direction of Mr. Albert Greene Duncan, treasurer of the Chicopee Mfg. Co.

## DRAFT PROPORTIONING.

*Editor Textile World Record:*

In the March issue, under the heading, "Draft Proportioning," "Bolster" gives the following rules for proportioning the draft between the rolls of a drawing frame:

"First. Use cube root of total draft for middle draft.

"Second. Use square root of middle draft for back draft.

"Third. Then total draft divided by (middle $\times$ back drafts) = front draft."

This rule is good in some places and for some people, but there are many overseers in the mills who cannot master the problem of cube root and some who cannot understand square root. For the benefit of those who have not had the advantages of a good training in arithmetic or for those who want an easier and quicker rule the following will be of service:

First. Back draft is equal to 4 per cent. of the total draft added to 1.

Second. Middle draft is 12 per cent. of total draft added to 1.

Third. Front draft is total draft divided by the product of middle and back drafts.

As an illustration take six for the total draft and apply above rules and we get the following:

Back Draft.

$6 \times .04 = .24 \ldots\ldots\ldots\ldots 1 + .24 = 1.24$

Middle Draft.

$6 \times .12 = .72 \ldots\ldots\ldots\ldots 1 + .72 = 1.72$

Front Draft.

$6 \div (1.24 \times 1.72) = 2.81$

This gives about what we find is the general usage on American makes of drawing frames, though there are some exceptions, as I have found that all machine builders do not give the same proportioning of draft on their drawing frames. Steuben.

---

The cotton ginning returns for this season's crop in the United States shows 356,824 bales, against 388,242 bales in the 1909 period and 402,229 bales in the 1908 period.

# Personals.

Rodman Gilder, secretary of the Crocker-Wheeler Co., manufacturers of electrical machinery, Ampere, N. J., has resigned to become associated with the well-known brokerage house of Dick Bros. & Co., 30 Broad St., New York. His seven years' experience in a high class industrial concern should be of value to him in the analysis of bonds of industrial and other corporations, such as are handled by the bond department of Dick Bros. & Co.

Jos. Harrison has accepted the position as superintendent of the worsted yarn department at Edward T. Steel & Co.'s Mill, Bristol, Pa. He comes from Passaic, N. J.

Thomas E. Ashley has accepted the position as superintendent of the Elmore Cotton Mill, Demopolis, Ala. He comes from Warren, Mass.

W. I. Keetch, formerly president of the Keetch Woolen Mills Co., and also general manager of the Wm. Taylor & Sons Co., Cleveland, Ohio, has become general manager of the Geo. H. Bowman & Co.'s mill at Cleveland.

James Woodhouse, overseer of carding at the Kennebec Mills, Fairfield, Me., has severed his connection with that company.

Jno. R. Menzies has accepted the position as overseer of carding at the Airlie Mill, Hanover, Conn. He was formerly employed at Peterboro, N. H.

Pliny Brett, overseer of weaving at the Faulkner Mfg. Co., No. Billerica, Mass., for a great many years, has severed his connection with that company.

Joe McCrary has accepted the position as overseer of carding at the Louisville Cotton Mill, Louisville, Ky.

Chas. F. McGill, overseer of finishing at the Kennebec Mill, Fairfield, Me., has severed his connection with that company.

H. G. McNish has accepted the position as overseer of carding at the No. 3 Mill of the Otis Co., Ware, Mass. He comes from the Louisville Cotton Mill, Louisville, Ky.

Fred R. Smythe, overseer of warping at the Hamilton Textile Co., Woonsocket, R. I., has resigned to accept a similar position with the Nashawena Mill, New Bedford, Mass.

V. C. Faunce, superintendent of the cotton department at the Hamilton Mfg. Co., Lowell, Mass., is to sever his connection with that company on May 1st.

Robert Firth has been appointed agent of the Bigelow Carpet Co., Lowell, Mass. He has been connected with this company for several years.

Fred Jackson, overseer of dyeing at the Southwark Mills Co., Philadelphia, Pa., has accepted a similar position with the DeWitte Dyeing & Bleaching Works, Somerville, N. J.

J. C. Wood has accepted a position as second hand in the finishing department at the Peace Dale Mfg. Co., Peace Dale, R. I.

P. W. Cochrane has accepted the position as superintendent of the Mayo Mills, Mayodan, N. C.

C. E. Moser has accepted the position as overseer of finishing at the Roanoke Mills, Roanoke Rapids, N. C. He comes from the Arcade Mills, Rock Hill, S. C.

J. T. Tidwell, overseer of weaving at the Drayton Mills, Spartanburg, S. C., has resigned, to accept a similar position with the Lowe Mfg. Co., Huntsville, Ala.

J. R. McIntyre, overseer of carding at the Payne Mills, Macon, Ga., has resigned to accept a similar position at Hartsville, S. C.

John L. Davidson, general superintendent of the Boyd-Mangum, Central and Spalding Mills of Griffin, Ga., has resigned to accept the position as superintendent of the Henderson Cotton Mills, Henderson, Ky.

D. J. Skidmore, assistant superintendent of the Norwood Mills, Norwood, N. C., has been promoted to the position of superintendent.

Richard Thatcher, superintendent of the Chester Mfg. Co., Chester, Pa., has resigned to accept a position with the Coosa Mfg. Co., Piedmont, Ala.

J. O. Brown, overseer of carding at the Whitaker Mills, Blacksburg, S. C., has resigned to accept a position with the Dan River Mill, Danville, Va.

A. C. Moss has accepted a position as overseer of the cloth room at the Marion Cotton Mill, Marion, N. C. He comes from the Loray Mills, Gastonia, N. C.

W. P. Mooneyham, overseer of spinning at the Kinston Cotton Mill, Kinston, N. C., has resigned to accepted a similar position with the Marlboro Mill No. 1, McColl, S. C.

J. H. Allen, who was overseer of the winding department at the Kinston Cotton Mills, Kinston, N. C., has been made overseer of spinning in the same mill.

Ellis Laycock, who has been superintendent of the Musketaquid Mill, Lowell, Mass., has been appointed superintendent of the Uswoco Mill of Lawrence, Mass., which is about completed, and which is owned by the U. S. Worsted Co.

David Tousignant has been appointed overseer of spinning at the Newmarket Mfg. Co., Newmarket, N. H. He comes from the Blackstone Mfg. Co., Blackstone, Mass.

H. P. Mallison has accepted the position as superintendent of the Bradford Mill, John & James Dobson, Germantown, Phila., Pa., succeeding Richard Boerner.

Geo. Wheeler, assistant designer at the Plainfield Woolen Co., Central Village, Conn., has severed his connection with that company.

John J. Barrett, overseer of carding at the Warner Cotton Mills, Newburyport, Mass., and who recently invented an improvement on cotton

lamps, fitted with E-7 clear glass Holophane reflectors.

A number of preliminary experiments were made with different sizes of lamps and with different grouping of the lighting units to determine the intensity and distribution best suited to meet the actual working conditions.

The final determination was to install the lamps in rows 8 feet apart and with the lamps on each row about 20 feet apart, the lamps on adjacent rows being staggered. The lamps were placed 11 feet above the floor.

This arrangement of lamps gives practically a uniform intensity over the entire floor area and the distribution is such as to reduce shadows to a negligible factor; approaching daylight conditions as nearly as practicable.

The basement is lighted by 28 16-c. p. carbon lamps so distributed as to facilitate inspection of the motors and shafting.

Current is supplied from a 550-volt, 40-cycle line and is transformed by a 15-k. w. transformer to the 3-wire, 115-230 volts system.

For fire protection, a complete system of sprinklers is provided.

The humidifying, heating and sprinkling apparatus was installed complete by the G. M. Parks Mfg. Co. of Fitchburg, Mass., and has given excellent satisfaction.

The looms are the standard Northrop pattern, E model, and arranged in two groups each embracing one-half the total equipment. Each group is driven by one 75 h. p. Westinghouse 3-phase, 40-cycle, 550-volt motor located in the basement. One motor is connected to six, the other to seven parallel lines of counters, running lengthwise of the building, hung in the basement from the underside of the loom floor structure, which belts pass up through the floor to the individual looms.

The entire design and construction of the shed and installation of its service equipment was executed by Westinghouse Church Kerr & Co., New York, under the direction of Mr. Albert Greene Duncan, treasurer of the Chicopee Mfg. Co.

## DRAFT PROPORTIONING.

*Editor Textile World Record:*

In the March issue, under the heading, "Draft Proportioning," "Bolster" gives the following rules for proportioning the draft between the rolls of a drawing frame:

"First. Use cube root of total draft for middle draft.

"Second. Use square root of middle draft for back draft.

"Third. Then total draft divided by (middle $\times$ back drafts) = front draft."

This rule is good in some places and for some people, but there are many overseers in the mills who cannot master the problem of cube root and some who cannot understand square root. For the benefit of those who have not had the advantages of a good training in arithmetic or for those who want an easier and quicker rule the following will be of service:

First. Back draft is equal to 4 per cent. of the total draft added to 1.

Second. Middle draft is 12 per cent. of total draft added to 1.

Third. Front draft is total draft divided by the product of middle and back drafts.

As an illustration take six for the total draft and apply above rules and we get the following:

Back Draft.

$6 \times .04 = .24 \ldots\ldots\ldots\ldots 1 + .24 = 1.24$

Middle Draft.

$6 \times .12 = .72 \ldots\ldots\ldots\ldots 1 + .72 = 1.72$

Front Draft.

$6 \div (1.24 \times 1.72) = 2.81$

This gives about what we find is the general usage on American makes of drawing frames, though there are some exceptions, as I have found that all machine builders do not give the same proportioning of draft on their drawing frames. Steuben.

---

The cotton ginning returns for this season's crop in the United States shows 356,824 bales, against 388,242 bales in the 1909 period and 402,229 bales in the 1908 period.

# Personals.

Rodman Gilder, secretary of the Crocker-Wheeler Co., manufacturers of electrical machinery, Ampere, N. J., has resigned to become associated with the well-known brokerage house of Dick Bros. & Co., 30 Broad St., New York. His seven years' experience in a high class industrial concern should be of value to him in the analysis of bonds of industrial and other corporations, such as are handled by the bond department of Dick Bros. & Co.

Jos. Harrison has accepted the position as superintendent of the worsted yarn department at Edward T. Steel & Co.'s Mill, Bristol, Pa. He comes from Passaic, N. J.

Thomas E. Ashley has accepted the position as superintendent of the Elmore Cotton Mill, Demopolis, Ala. He comes from Warren, Mass.

W. I. Keetch, formerly president of the Keetch Woolen Mills Co., and also general manager of the Wm. Taylor & Sons Co., Cleveland, Ohio, has become general manager of the Geo. H. Bowman & Co.'s mill at Cleveland.

James Woodhouse, overseer of carding at the Kennebec Mills, Fairfield, Me., has severed his connection with that company.

Jno. R. Menzies has accepted the position as overseer of carding at the Airlie Mill, Hanover, Conn. He was formerly employed at Peterboro, N. H.

Pliny Brett, overseer of weaving at the Faulkner Mfg. Co., No. Billerica, Mass., for a great many years, has severed his connection with that company.

Joe McCrary has accepted the position as overseer of carding at the Louisville Cotton Mill, Louisville, Ky.

Chas. F. McGill, overseer of finishing at the Kennebec Mill, Fairfield, Me., has severed his connection with that company.

H. G. McNish has accepted the position as overseer of carding at the No. 3 Mill of the Otis Co., Ware, Mass. He comes from the Louisville Cotton Mill, Louisville, Ky.

Fred R. Smythe, overseer of warping at the Hamilton Textile Co., Woonsocket, R. I., has resigned to accept a similar position with the Nashawena Mill, New Bedford, Mass.

V. C. Faunce, superintendent of the cotton department at the Hamilton Mfg. Co., Lowell, Mass., is to sever his connection with that company on May 1st.

Robert Firth has been appointed agent of the Bigelow Carpet Co., Lowell, Mass. He has been connected with this company for several years.

Fred Jackson, overseer of dyeing at the Southwark Mills Co., Philadelphia, Pa., has accepted a similar position with the DeWitte Dyeing & Bleaching Works, Somerville, N. J.

J. C. Wood has accepted a position as second hand in the finishing department at the Peace Dale Mfg. Co., Peace Dale, R. I.

P. W. Cochrane has accepted the position as superintendent of the Mayo Mills, Mayodan, N. C.

C. E. Moser has accepted the position as overseer of finishing at the Roanoke Mills, Roanoke Rapids, N. C. He comes from the Arcade Mills, Rock Hill, S. C.

J. T. Tidwell, overseer of weaving at the Drayton Mills, Spartanburg, S. C., has resigned, to accept a similar position with the Lowe Mfg. Co., Huntsville, Ala.

J. R. McIntyre, overseer of carding at the Payne Mills, Macon, Ga., has resigned to accept a similar position at Hartsville, S. C.

John L. Davidson, general superintendent of the Boyd-Mangum, Central and Spalding Mills of Griffin, Ga., has resigned to accept the position as superintendent of the Henderson Cotton Mills, Henderson, Ky.

D. J. Skidmore, assistant superintendent of the Norwood Mills, Norwood, N. C., has been promoted to the position of superintendent.

Richard Thatcher, superintendent of the Chester Mfg. Co., Chester, Pa., has resigned to accept a position with the Coosa Mfg. Co., Piedmont, Ala.

J. O. Brown, overseer of carding at the Whitaker Mills, Blacksburg, S. C., has resigned to accept a position with the Dan River Mill, Danville, Va.

A. C. Moss has accepted a position as overseer of the cloth room at the Marion Cotton Mill, Marion, N. C. He comes from the Loray Mills, Gastonia, N. C.

W. P. Mooneyham, overseer of spinning at the Kinston Cotton Mill, Kinston, N. C., has resigned to accepted a similar position with the Marlboro Mill No. 1, McColl, S. C.

J. H. Allen, who was overseer of the winding department at the Kinston Cotton Mills, Kinston, N. C., has been made overseer of spinning in the same mill.

Ellis Laycock, who has been superintendent of the Musketaquid Mill, Lowell, Mass., has been appointed superintendent of the Uswoco Mill of Lawrence, Mass., which is about completed, and which is owned by the U. S. Worsted Co.

David Tousignant has been appointed overseer of spinning at the Newmarket Mfg. Co., Newmarket, N. H. He comes from the Blackstone Mfg. Co., Blackstone, Mass.

H. P. Mallison has accepted the position as superintendent of the Bradford Mill, John & James Dobson, Germantown, Phila., Pa., succeeding Richard Boerner.

Geo. Wheeler, assistant designer at the Plainfield Woolen Co., Central Village, Conn., has severed his connection with that company.

John J. Barrett, overseer of carding at the Warner Cotton Mills, Newburyport, Mass., and who recently invented an improvement on cotton

combers, gave a banquet to a number of his friends at the Wolfe Tavern, Newburyport, March 20th, 1911. Those present were: Louis Dexter, agent; William Wildes, paymaster; John J. Barrett, carder; Albert Gastonguag, spinner; James E. Farrell ,finisher; Charles J. Linderson, master mechanic; James Trott, William Farrell, Arthur Blain, Peter Lafaille, John Lunt and Dr. J. N. Shaw. A very pleasant evening was spent in talking over the work of the mill. Mr. Louis Dexter spoke on "Scientific Mill Management" during the supper and expressed his sincere satisfaction to all for their interest shown in the future prosperity of the Warner Mills. Having fully enjoyed Mr. Barrett's generosity, the happy party broke up, wishing him greater success for more patents and many returns of the long-to-be-remembered evening.

George J. MacAlpine, designer at the Victor Mfg. Co., Clinton, Mass., has resigned. He is succeeded by William Muir, who has been his assistant.

Charles T. Hirst has taken a position in charge of the fulling department at the Peace Dale Mfg. Co., Peace Dale, R. I. He was formerly employed at Penacook, N. H.

John E. Tobin has accepted the position as overseer of weaving at the China Mill, Suncook, N. H. He was formerly employed at the Warren Mfg. Co., Warren, R. I.

W. L. Wardrobe has accepted the position as overseer of carding at the Bernon Mill, Georgiaville, R. I. He was formerly employed at the Otis Co., Ware, Mass.

Alex. Letendreff, overseer of weaving at the No. 2 Mill of the Coronet Worsted Co., Mapleville, R. I., has resigned and is succeeded by Oliver Ainley.

John Riley has accepted the position as overseer of weaving at the Beacon Mfg. Co., New Bedford, Mass. He was formerly employed at the China Mill, Suncook, N. H.

George A. Rodger, overseer of finishing at the Bellevue Mill, Clinton, Mass., has severed his connection with that company.

Henry Quinn has accepted a position as overseer of finishing at the No. 2 Mill of the Sidney Blumenthal Co., Shelton, Conn., succeeding Henry W. Templeton.

Charles Alexander has been appointed designer at the Marston Worsted Co., Skowhegan, Me. He was formerly employed in New York City as styler.

George Smith has accepted a position as master mechanic at the Standard Spinning Co., Oswego, N. Y. He was formerly employed at the Ontario Knitting Co., same city.

J. H. Tierney, overseer of finishing at the Sheridan Woolen Co., Ashuelot, N. H., has severed his connection with that company.

P. F. Farrell has accepted the position as overseer of carding at the Lyman Mill, Holyoke, Mass. He comes from New Bedford, Mass.

Arthur Butterworth has accepted the position as second hand in the finishing department at the Peace Dale Mfg. Co., Peace Dale, R. I.

Maurice J. Langdon has accepted the position as chief chemist for McCleary, Wallin & Crouse, Amsterdam, N. Y.

John Bowman has been appointed overseer of carding at the Stroudsburg Woolen Mill, Stroudsburg, Pa.

Phineas Feather, for a number of years superintendent of the A. D. Gleason Woolen Mill, at Gleasondale, Mass., and who resigned the position about a year ago, shot and seriously injured the present superintendent, Charles E. Roberts, at the office of the company. Mr. Roberts was taken to the Clinton Hospital, where his wounds were dressed and it is stated he will recover.

Hiram Artwell, overseer of weaving at the No. 3 Acushnet Mill, New Bedford, Mass., has resigned to accept a similar position with the Dwight Mfg. Co., Chicopee, Mass. On leaving the Acushnet Mill he was presented with a handsome gold watch and chain by the employees in his department.

Herbert Watson, overseer of carding at the Kilburn Mill, New Bedford, Mass., has resigned to accept a similar position with the Dartmouth Mill, succeeding Matthew Conlan.

James Thomson has accepted the position as overseer of carding at the Hebron Mfg. Co., Hebronville, Mass. He comes from Pawtucket, R. I.

John A. Crossland, overseer of carding at the Nyanza Mill, Woonsocket, R. I., has resigned and is succeeded by H. F. Sisson. Mr. Crossland is to accept a position as superintendent of the yarn department at the Chipman Knitting Mill, Easton, Pa.

George A. Rodger, overseer of finishing at the Bellevue Mill, Clinton, Mass., has resigned.

William J. Murray, superintendent of the worsted yarn department at the Edward T. Steel & Co.'s mill, Bristol, Pa., has resigned. He is succeeded by Joseph Harrison.

J. F. Clark has been appointed manager and superintendent of the Echota Cotton Mills, Calhoun, Ga. He was recently connected with the Fulton Bag and Cotton Mills of Atlanta, Ga., and previous to that superintendent of the John M. Stone Cotton Mill, Starkville, Miss.

J. H. McDowell, superintendent of the Huss Mfg. Co., Bessemer City, N. C., will also be superintendent of the Vermont Mills of that place, which are just starting up.

W. H. Johnson has accepted a position as overseer of weaving at the Gainesville Cotton Mills, Gainesville, Ga. He comes from Martinsville, Va.

W. B. Wardwell has accepted the position as overseer of carding at the Lynchburg Cotton Mills, Lynchburg, Va. He comes from Hartsville, S. C.

J. W. McElhannon, overseer of weaving at Gainesville, Ga., has resigned to accept a similar position with the Lois Cotton Mills, Douglasville, Ga.

G. C. Sexton has been appointed manager of the Gilreath Mfg. Co., Greenville, S. C. He comes from Fairfield, Ill.

E. P. Reel has accepted the position as overseer of weaving at the Vermont Mills, Bessemer City, N. C.

J. W. Davis, overseer of carding at Crawford, Ga., has resigned and is now overseer of spinning at the Athens Mfg. Co., Athens, Ga.

J. R. McIntyre, overseer of carding at the Payne Cotton Mill, Macon Ga., has resigned to accept a similar position at Hartsville, S. C.

E. W. Cook, overseer of finishing at the Black River Woolen Co., Ludlow, Vt., has resigned.

N. F. Rourke has accepted a position as overseer of finishing for S. F. Cushman & Sons, Monson, Mass. He comes from Sangerville, Me.

Samuel Birkbeck has been appointed assistant to the manager at the Flaxen-Fiber Down Co., Lockport, N. Y. He comes from Clinton, Mass.

Benjamin Jones, one of the oldest employes of the Willimantic Thread Co., Willimantic, Conn., and at present overseer of the winding department, is to sever his connection with that company in a short time. It is expected that Geo. M. Graves, assistant superintendent of the finishing department, will succeed him and that Geo. K. Anderson, who has been in charge of the pulp spool department will succeed Mr. Graves. Ellison Smith, for several years doing clerical work for this company, will succeed Mr. Anderson.

John S. Lockman, from Huntsville, Ala., has succeeded J. T. Kersey, as overseer of spinning with the Coosa River Spinning Co., Bon Air, Ala.

J. T. Kersey, overseer of spinning at the Coosa River Spinning Co., Bon Air, Ala., has resigned to accept a position as superintendent of the Marble City Mills, Sylacauga, Ala.

W. J. Willett has accepted the position as overseer of spinning at the Majestic Mills, Belmont, N. C.

G. V. Anderson has been promoted to the position as overseer of weaving at the Avondale Mills, Birmingham, Ala., having been formerly second hand in room No. 2.

F. D. Powell has accepted the position as overseer of carding at the Century Cotton Mills, South Boston, Va. He comes from Roxboro, N. C.

E. H. Bost, overseer of weaving at the Avondale Mills, Birmingham, Ala., has resigned to accept a similar position at Bemis, Tenn.

Charles Hanner, overseer of weaving at the Nantucket Mill, Spray, N. C., has resigned his position to accept a position as assistant superintendent at the Bellwill Mills, Wilmington, N. C.

T. B. Reynolds, overseer of spinning, spooling, etc., at the Putnam Mill & Power Co., Eatonton, Ga., has resigned to accept a similar position with the Monticello Cotton Mill, Monticello, Ark.

T. P. Moose has accepted a position as overseer of carding and spinning at the Atlas Mfg. Co., Bessemer City, N. C.

C. D. Hughes has resigned his position as overseer of the cloth room at the Mills Mfg. Co., Greenville, S. C.

A. F. Brandon has been promoted from second hand to overseer of spinning in Mill No. 1 of Dan River Mills, Danville, Va.

Albert N. Martin, overseer of carding at the No. 1 Whitman Mill, New Bedford, Mass., has resigned to accept a similar position with the Everett Mill, Lawrence, Mass.

Elmer G. Childs, agent of the Boston Duck Co., Bondsville, Mass., has entered the employ of Bliss, Fabyan & Company with headquarters at Boston, Mass. He has held the position at Bondsville since 1895. He is succeeded by Samuel Stewart, superintendent of the mill for a number of years.

Williston H. Stone, an employe of the Onegan Mill, American Woolen Co., Old Town, Me., was caught in the picker and had his arm torn from the socket.

J. R. Young, overseer of spinning at the Loray Mill, Gastonia, N. C., has resigned to accept a similar position with the Fulton Bag & Cotton Co., Atlanta, Ga. E. C. Herrin succeeds him and comes from Cateechee, S. C.

G. C. Truelow has accepted the position as overseer of mule carding and spinning at the Manetta Mills, Lando, S. C. He comes from Greenville, S. C.

David Stewart, overseer of dyeing at the Salt's Textile Mfg. Co., Norwalk, Conn., has severed his connection with that company.

Wm. E. Chamberlin, overseer of finishing at the Montrose Woolen Co., Woonsocket, R. I., has severed his connection with that company.

James Hillens has accepted the position as overseer of finishing at the Kennebec Mill, Fairfield, Me., succeeding Chas. F. McGill.

W. A. Trotter has accepted the position as superintendent of the Cedarburg Woolen Mill, Cedarburg, Wis. He formerly held this position.

Sylva LaReau has accepted the position as designer at the Bound Brook Woolen Mills, Bound Brook, N. J., succeeding A. L. Cochrane.

P. J. Harney, overseer of weaving at the Hoosac Worsted Mill, North Adams, Mass., has severed his connection with that company. He was presented with a handsome Meerschaum pipe, fountain pen and a box of choice cigars by the help in the weaving department. Mr. Harney made many friends in North Adams during his stay and they all wished him the best of success.

W. S. Trickett, superintendent of the Esmond Mill, Esmond, R. I., has severed his connection with that company.

Wm. H. Robinson has been appointed superintendent of the Nos. 1 and 3 Mt. Vernon Mills of the Consolidated Cotton Duck Co., Baltimore, Md. He comes from Oswego, N. Y.

Wm. J. Ennis has accepted the position of manager of the new dress goods mill known as the Shepperd Mfg. Co., Manayunk, Phila., Pa.

George Cooper has accepted the position as overseer of spinning at the Rodman Mfg. Co., Allenton, R. I. He was formerly employed at the Whitin Machine Works, Whitinsville, Mass., setting up machinery.

M. A. Sheehan, assistant superintendent of the Danielson Cotton Co., Danielson, Conn., has severed his connection with that company.

W. Roland Holt has accepted the position as superintendent of the Cutler Mfg. Co. of Warren, R. I. He was formerly overseer of carding at the Ravine Mill, Vernon, Conn.

J. J. O'Connor, superintendent of the waste department at the N. E. Cotton Yarn Co., New Bedford, Mass., has resigned.

Walter Whipple has been appointed superintendent of the Nashua Mfg. Co., Nashua, N. H., succeeding Wm. F. Arthur. Mr. Whipple has been assistant superintendent at this mill for some time.

Samuel McIntire has accepted the position as overseer of carding at the Squam Lake Woolen Mills, Ashland, N. H., which have recently begun manufacturing by the owners of the Merrimack Woolen Co., Lowell, Mass.

C. W. Follansbee and Frederick W. Adams were chosen directors of the Knox Woolen Co., Camden, Me., at a meeting of the directors held recently, to succeed the late Josiah Adams and H. L. Allen. Edwin C. Fletcher was elected president of the company.

George A. Heighway has accepted a position as superintendent of the weaving department for the Shuttleworth Bros. Co., Amsterdam, N. Y., manufacturers of carpets. He was formerly employed at the Bigelow Carpet Co., Clinton, Mass.

Elmer Lovering has accepted a position as overseer of weaving at the Shetucket Co., Norwich, Conn. He comes from Lowell, Mass.

Joseph L. Ivers has accepted the position as overseer of ring spinning, warping and twisting for Mill B of the Greylock Mills, North Adams, Mass. He was formerly employed for the I. E. Palmer Co., Middletown, Conn.

## DEATHS.

Richard C. Maddock of the firm of Maddock & Wolstencroft of the Roxboro Hosiery Mills, 2011 E. Arizona St., Philadelphia, Pa., died suddenly April 10th at his home on Hazel Ave., at the age of 48 years. He came to Philadelphia from Portsmouth, Ohio, in 1900. He was prominent in Masonic circles and is survived by a widow, one son and two daughters.

Chas. L. Simpson, prominent in the knit goods business in Montgomery County, died at Amsterdam, N. Y., at the age of 46 years of pneumonia.

A. C. Hutcheson, president and treasurer of the Alta Vista Cotton Mills, Alta Vista, N. C., committed suicide in that place by shooting himself as he sat in a chair in the office at the mill. It is believed the act was the result of ill health.

Irving Bitner, treasurer of the Windsor Knitting Mill, Hagerstown, Md., died at his home in that city after an illness of two years. He is survived by a wife and one daughter.

Thomas Breslin, well known in textile and financial circles, died April 12 at his home in Waterford, N. Y. He was born Dec. 23, 1836. In 1884 he entered into the knit goods business and formed the Waterford Knitting Co. In 1894 he established the Ormsby Textile Co. At the time of his death he was treasurer of the following companies: The Waterford Knitting Co., the Hope Knitting Co., and the Ormsby Textile Co. He was a director of several companies, and is survived by a wife and three sons.

Wm. Hepworth of Wm. Hepworth & Sons, Philadelphia, Pa., manufacturers of garnetted worsted waste, and who had been in business for a number of years, died at his home in that city at the age of 68 years.

Francis B. Green, one of the directors of the Wamsutta Mill, New Bedford, Mass., and also a director of the Continental Mill, Lewiston, Me., died from an attack of pneumonia in Florence, Italy. He had been abroad since early in the year, and his death was wholly unexpected.

Geo. W. Grinnell, one of the promoters and directors of the Chace Mill, Fall River, Mass., died recently at his home in that city, at the age of 81 years. His wife died in 1903, and he is survived by one son, Henry F. Grinnell, bookkeeper at this mill.

John Herries, overseer of weaving at the Ballard Vale Mills Co., Ballard Vale, Mass., for the past 4 years and previous to that time second hand for the Haile & Frost Mill, Hinsdale, Mass., died at his home in Ballard Vale, April 8, of pneumonia. Mr. Herries had been in good health up to the time of his death. He was 36 years of age and married.

Dwight E. Potter, for many years general manager of the Willimantic Thread Co., Willimantic, Conn., committed suicide at Hartford, Conn., at the age of 70 years. He had retired from the cotton business some four years ago.

Thomas Wilson of the firm of James Wilson & Sons, 1133 North 4th St., Philadelphia, Pa., manufacturers of tapes and carpet bindings, died in that city at the age of 55 years. He was born in Philadelphia and was prominently identified with business interests in that city and New York. He was a member of the Manufacturers' Club and other organizations.

Charles Bromley died at his home in Norwich, Conn. He had been an overseer of woolen carding for several years and had worked in several mills in New England and was highly respected by all who knew him.

# *Mill News*

**Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.**

## COTTON.

### New Mills.

*Georgia, Lagrange. On April 15 construction work will be started on buildings for the new Dunson Mills and according to the plans they will be completed and equipped ready to begin manufacturing by January 1, 1912. Building contract was awarded to Pike Bros. Lumber Co. of Lagrange. The main mill will be of brick, two stories high, and the weave shed will be one story, 132 by 572 ft. Machinery contracts have been awarded. The initial equipment will be 20,000 ring spindles and from 400 to 500 looms for making 36 to 72-inch goods from four ounces to 17 ounces per yard from single and ply yarns, including ducks, osnaburgs, drills, sheetings and twills. The machinery is to be driven by a 1,200 h. p. steam plant. As noted in earlier reports, the capital stock of this concern is $500,000. J. E. Dunson is president; T. J. Thornton, treasurer, and W. S. Dunson, superintendent and buyer.

*Massachusetts, Fall River. Contract for the erection of buildings for the new Pilgrim Mill has been awarded to Beattie & Cornell, this city, and ground has been broken for foundations. Plans call for a three-story mill for spinning and a two-story weaving mill. Electric power is to be furnished by the Fall River Electric Light Co. As noted previously, 50,000 spindles and 1,200 looms will be installed at first.

*Massachusetts, Fall River. Beattie & Wilcox, contractors, have begun work on the foundation of the mill for the Standard Narrow Fabric Co., to be located on Portland St. Details of the company and plant have been given previously.

*North Carolina, Mt. Holly. George A. Howell has organized the Energetic Cotton Mill Co. with capital stock of $100,000 and is having plans prepared for a 1-story mill building, 71 by 300 ft., with cement floor, to be equipped with 5,000 spindles for manufacturing 70s to 120s cotton yarns. It is also planned to manufacture collars and cuffs in the future. Mr. Howell was formerly superintendent of the Chronicle Mills and the Imperial Yarn Mills, Inc., of Belmont, but at present is located in Charlotte. He started the new mill enterprise about two months ago and planned to incorporate under the style of the Enterprise Mills.

Pennsylvania, Philadelphia. The James & William G. Henry Co., recently incorporated with a capital of $50,000, are manufacturing cotton carpet and upholstery yarns in the old Friedberger Mills at Fishers Lane and 18th St. The officers of the company are James Henry, president; William Henry, treasurer, and Harry S. Henry, secretary and superintendent. The plant contains 10 sets, 3,400 spindles. The main office of the company is at Trenton Ave. and Tioga Sts., where the production is sold direct.

Pennsylvania, Philadelphia. Binder, Rockie & Ward have recently installed two broad looms at 2632 N. Mascher St., on which they are manufacturing a line of Madras tapestry curtains, draperies, etc., buying 2/80 warps, 1/40 and 2/16 filling, and selling their production direct. The plant will be greatly enlarged during the coming three or four months to permit them to manufacture on a larger scale.

*Virginia, Norfolk. A new corporation controlled by B. N. Duke, Lawrence S. Holt and allied interests in North Carolina and South Carolina has acquired the Margolius Co., Inc. The new company is known as the Union Cotton Bagging Corp. and has been incorporated under the laws of the State of Virginia with authorized capital stock of $300,000, of which $250,000 is actually subscribed. The officers are R. Margolius, president; I. Margolius, vice-president; Lawrence S. Holt, Jr., secretary and treasurer. These men with J. Harper Erwin, secretary and treasurer of the Durham Cotton Mfg. Co., and John A. Law, president of the Central National Bank of Spartanburg, are the directors. The business of the Margolius Co. will be continued at the Norfolk plant and a branch will be establihed at Spartanburg to manufacture jute and cotton batting and perhaps bagging. Lawrence S. Holt, Jr., has arrived in Norfolk to take charge of the local property. There is a rumor to the effect that the new plant at Spartanburg is the first of several branches to be established.

### Enlargements and Improvements.

Alabama, Siluria. The Buck Creek Cotton Mills Co. has been organized with capital stock of $600,000. T. C. Thompson of Birmingham is president. This is a reorganization of the Siluria Cotton Mill Co. for which receivers were appointed about a year ago. In the future manufacturing will be carried on on a greatly enlarged scale and within the past few months several hundred looms have been installed. The capital stock of the old company was $250,000.

Connecticut, Vernon. New looms have been ordered by the Ravine Mills, Paul Ackerly, proprietor, and when installed the plant will have a total of 4,500 spindles and 114 looms on which scrim goods are produced.

Connecticut, Wauregan. Work will be started in a few days on a brick smokestack for the power plant of the Wauregan Co. The work is being done by the H. P. Cummings Construction Co.

Louisiana, New Orleans. An addition is to be built for the Lane Cotton Mills of brick construction at a cost of $4,200.

Massachusetts, Bondsville. Contract has been awarded for the erection of an addition to the Boston Duck Co., 40 by 100 ft., of brick.

Massachusetts, Fall River. Changes now being made at the Stafford Mills will give the plant total equipment of 114,584 ring spindles, 1,826 narrow and 995 broad looms. E. E. Hathaway is president; S. W. Wilkinson, treasurer and agent, and Timothy Sullivan, superintendent and buyer of supplies.

Massachusetts, Fall River. The work of building one story on one of the mills of the Barnaby Mfg. Co. has been completed and 5,500 spindles with carding, spooling and warping machinery will be installed. The Barnaby Mfg. Co. has been obliged to buy some yarns and this new equipment balances the departments.

*Massachusetts, Fisherville. The installation of electric power equipment in the spinning department of the new four-story addition of the Fisher Mfg. Co. has been completed. The card room and weave room will not be equipped until the exact position of the machinery is determined and none of the machinery has arrived as yet.

Massachusetts, Lowell. An extension is to be built on the finishing mill of the Merrimack Mfg. Co. which will be 100 by 80 ft., three stories high. Some changes are being made in the equipment, which include the throwing out of a number of old-style small cards and installing new revolving flat cards in their place.

Massachusetts, Lowell. Permit has been granted the Appleton Co. to build a power house, 50 by 36 ft. The building will be of brick construction with cement base and gravel roof and will cost $2,200. A steam turbine is to be installed.

*New York, Lockport. Twenty new looms will be installed in the addition to be built for the Lockport Textile Co., which will give them a total of 90 looms. They manufacture towels and crashes, bleaching and finishing the product. The capital stock is $30.000. James Clifford is president; Joseph J. Aldred, treasurer and buyer.

North Carolina, Gastonia. An addition is being built to the Arlington Cotton Mills in which a number of combers recently purchased will be installed.

North Carolina, Gibsonville. One hundred new box looms are to be installed by the Minneola Mfg. Co. to replace old equipment. Three napping machines also are being added.

North Carolina, Greensboro. In reference to the report that the White Oak Cotton Mills will be changed from steam to electric power it can be stated that the mill has always been electrically driven, but this power was generated by steam. They have now made a contract with the Southern Power Co. to furnish electric power. This change has not yet been completed, the work being under way at the present time and they hope to have it finished in the near future. The present steam power plant will be kept as an auxiliary in case the Southern Power Co. should be compelled to shut off their power at any time.

North Carolina, Rockingham. A number of looms and a new slasher are being added to the equipment of No. 2 Mill of the Roberdel Mfg. Co.

*North Carolina, Salisbury. In addition to enlarging the dyeing department, the Salisbury Cotton Mills have decided to add 34 looms. Contract for this equipment has been awarded.

North Carolina, Spray. Dyeing and bleaching equipment is being installed in the Lily Mills.

North Carolina, Statesville. Orders have been placed by the Statesville Cotton Mills for 1,000 spindles with carding and other preparatory equipment. This will give them equipment of 11,000 producing spindles when the new machinery is installed about June or July. William Wallace is president; T. D. Miller, treasurer; and J. R. French, superintendent and buyer of supplies.

Pennsylvania, Philadelphia. The contract for the erection of the new buildings for the Hohlfeld Manufacturing Co., now located at 8th and Dauphin Sts., has been awarded to a local builder, who will commence the operation at once. The main building will be three stories high, 60 by 249 ft., with a one-story boiler house, 28 ft. 6 in. by 52 ft., and a storage building, 15 ft. 6 in. by 116 ft.

Pennsylvania, Philadelphia. Plans are being prepared for a two-story factory building 49 by 178 ft. at Pierce and Orthodox Sts. for Gordon Bros. Co., Inc., manufacturers of haircloth, whose plant was burned out several months ago.

Pennsylvania, Philadelphia. The equipment of the Rajah Manufacturing Co., with W. H. Margerison, president, A. E. Margerison, treasurer, and Thos. E. Margerison, superintendent, manufacturers of Turkish towels at Jasper and Hazzard Sts., has been doubled. They are now operating 40 broad and 40 narrow looms, 10 sewing machines and 3 braiders. The production of the plant is sold direct, the office being at Emerald and Sargeant Sts.

Pennsylvania, Philadelphia. William Handley, sales manager for the Niagara Thread Co., 120-22 South American St., reports that the increasing business of the company has compelled them to take over another floor in the building in which they are located, which has enabled them to increase their capacity 25 per cent. New machinery has been installed and more is on the way. The company also has under consideration the taking over of a portion of an adjoining building with which to further increase their operations. They are manufacturing sewing threads, glazed cottons, etc., and are making a specialty of threads for the knitting trade which has been meeting with much favor and for which they are receiving a large amount of business.

South Carolina, Calhoun Falls. The Calhoun Mills are reported to be contemplating increasing from 25,000 spindles to 40,000 spindles. Converter's goods are manufactured.

South Carolina, Greenville. No. 1 Mill of the American Spinning Co. is being changed to electric drive. The steam power plant will be retained so it may be used at any time when necessary.

South Carolina, Lando. A 2-story addition, 50 by 80 ft., will be built for the Manetta Mills. The lower floor will be used for opening department and new napping and finishing equipment will be set up on the second floor. Cotton blankets, flannels and yarns are manufactured by this concern on 21,000 spindles and 288 looms.

*Texas, Cuero. The Cuero Cotton Factory has been reorganized as the Guadalupe Valley Cotton Mills. As noted previously, the new company will expend $50,000 for new machinery and enlargements, including a 60 by 100-foot addition to the main building, an additional warehouse and opening room, picking, carding and spinning machinery. All the old equipment will be overhauled and will be ready for operation by the time the new equipment is installed, which will be about September. Contracts for the new buildings will be let this month or early in May. When all changes are completed the plant will have about 8,000 spindles and 160 looms for manufacturing heavy sheetings, drills and duck.

Virginia, Danville. The new building to be used as a machine shop at the Riverside Division of the Riverside & Dan River Cotton Mills is nearly completed, and they will remove into it within the next 60 days. Their object is to concentrate the machinery of this department at one point instead of at two or three different places as heretofore. Little additional machinery will be required, as they have practically a full equipment.

**Mills Starting Up.**

Alabama, Demopolis. When the plant formerly operated by the Elmore Mfg. Co. resumes manufacturing, it will be under the name of the Elmore Cotton Mills. Thos. E. Ainley, formerly head of the waste yarn department of the Warren Cotton Mills, West Warren, Mass., will be superintendent. A new corporation is to be formed later.

*Georgia, Albany. In a few weeks the Albany Cotton Mills will have their new plant in full operation. Ten thousand spindles and 300 looms for making sheetings have been installed with three 250 h. p. boilers, steam engine, etc. This company was incorporated in April, 1909, and began building the following October.

*North Carolina, Bessemer City. A charter has been granted the Atlas Mfg. Co. with capital stock of $100,000. C. J. Huss, A. A. McLean and J. J. Ormond are the incorporators. The new corporation takes over and will operate the old Vermont Cotton Mills, which are equipped with 5,000 spindles and 100 looms on which sheetings and drills have been manufactured. A line of goods for the bag trade is to be manufactured. Mr. Huss will be president and John H. McDonald and J. E. Hornbuckle will be in charge of manufacturing.

Texas, Corsicana. The Corsicana Cotton Mills have been reorganized with G. J. Hefflin, president; E. E. Sheehey, treasurer; M. E. Woodrow, agent, and O. M. Peters, superintendent. Mr. Peters and Mr. Woodrow will do the buying. The plant contains 5,000 spindles and 150 looms on which 7 to 12-ounce flat duck will be manufactured, beginning April 1.

**Mills Shutting Down.**

Canada, Nova Scotia, Windsor. The Dominion Cotton Mills Co. will close the Windsor plant indefinitely, the reason given being a shortage of help. The plant will be closed as soon as the stock now in process is worked up.

Massachusetts, Ashburnham. The Ashburnham Mills will discontinue manufacturing and the plant has been shut down.

## WOOLEN.

**New Mills.**

Newfoundland, St. Johns. A new company has been organized under the style of the British Woolen, Ltd., with capital stock of $100,000. Woolen blankets, underwear, cardigan jackets, sweaters and similar goods will be manufactured, beginning about September 1. A mill is now under construction and will be equipped at the start with two sets of cards, 672 spindles, three looms and 16 knitting machines. J. J. McCabe will be general manager and T. G. Dickson, who was with Stansfield's, Ltd., for 19 years, will be superintendent. Other officers have not as yet been elected.

Pennsylvania, Philadelphia. The Ferguson Carpet Co., recently reported by us as applying for a charter, have received incorporation papers and leased the first floor of the Cope Mills, Wayne Junction, where they are now installing their equipment.

Pennsylvania, Philadelphia. The Shepperd Manufacturing Co., with G. P. Shepperd as president and William Ellis as superintendent, has fitted up a plant at Main and Cresson Sts., in Ripka Mills, with 60 looms which they are operating on dress goods and selling direct to the jobbing trade. Mr. Shepperd was formerly connected with D. W. C. Ellis Co., both as a member of the firm and general manager of the plant.

Pennsylvania, Philadelphia. The Sprague Worsted Mills, A. L. Sprague and H. Taylor, formerly employed by Benjamin Greer, have leased a portion of the Bellvue Mills at Wister St. and P. & R. R., Germantown, where they are operating 24 looms, leased by them from Mr. Greer, on men's wear and dress goods which they are selling through New York.

*Pennsylvania, Philadelphia. The Balmoral Textile Manufacturing Co., recently reported by us as starting up at Kensington Ave. and Venango Sts., are equipped with 5 broad looms on which they are manufacturing Scotch rugs which they are selling through New Work. The proprietor and superintendent of the plant is Harry Stover.

**Enlargements and Improvements.**

Connecticut, Shelton. Some small additions are contemplated by Sidney Blumenthal & Co., Inc.

Maine, Foxcroft. Mayo & Son. Inc., will add 20 new looms, setting them up for the present in the former spinning room in the old part of the mill. Plans are being made to replace the old frame mill formerly used for spinning and carding with a new concrete structure.

Maine, Waterville. Recent improvements at the Wyandotte Worsted Co. have been completed, and they now have eight sets, 96 broad and four narrow looms. T. H. McGowan is president, W. W. McDonald, treasurer; N. H. Barrows, general manager, and Thos. McEwen, superintendent. C. Bahnsen & Co., 80 Leonard St., New York, are the selling agents.

Massachusetts, Lowell. Plans for the new dye house to be built during the summer for the Bigelow Carpet Co. have not been fully completed, and the size of the new mill cannot be given. The old dye house, which will be replaced by the new mill, is the last of the old dye houses.

Massachusetts, North Oxford. A new dye house may be built in the near future by the Thayer Woolen Co.

Massachusetts, Norton. The Talbot Wool Combing Co. is building an addition 135 ft. long which will be used for scouring. The work is being done by Contractor Witherell of Taunton. It is expected the enlargement will be completed in 3 weeks.

Massachusetts, Palmer. Fourteen new looms have been installed in the Palmer Carpet Mill to replace old equipment.

New Hampshire, Enfield. A special town meeting will be held to vote on a proposition to exempt from taxation the new mill proposed as an addition to the Baltic Mills of the American Woolen Co. The present plant has not been operated full in all departments at various times in the past on account of insufficient yarn production. It is reported that the new mill will be equipped for spinning.

New Hampshire, Hillsboro. A new cloth room and sewing room is being built by the Hillsboro Woolen Mill Co. and a new dresser is being installed. Some departments of the plant are running overtime and prospects are very bright for this company.

New York, Malone. The machinery equipment of the Lawrence, Webster Co. is being transferred to the new mill now about completed. Work was started on this new mill last August, when it was reported that one set of cards and six looms would be added to the old equipment.

Pennsylvania, Bloomsburg. An addition is being erected to the plant of the Magee Carpet Co., 225 ft. long and 50 ft. wide, 2 stories high. The new space will be used for storage and weaving. Twenty-two broad looms have been ordered and new cap frames.

Pennsylvania, Chambersburg. A large amount of machinery has arrived for the Melville Woolen Co., which was purchased at the sale of the Knoxville Woolen Mills. Building operations have been started on a new picker house to be located west of the present building. A night and day schedule is in force at present in the card room.

Pennsylvania, Clifton Heights. Application for a charter for the Caledonia Woolen Mills, Inc., has been made by A. Pleet, president; N. Stewart, vice-president; D. H. Pleet, secretary, and Harry Miller, treasurer. The new corporation will take over the business of Stewart & Pleet, manufacturers of cotton worsteds and similar goods. Fifty looms have recently been added, giving total equipment of 150 looms.

Pennsylvania, Philadelphia. It is reported that the Amber Carpet Mills, operated by C. H. Masland & Sons, and containing 300 looms which they run on carpets and rugs, will be shut down for about three weeks for the purpose of renovating the equipment and making repairs.

*Rhode Island, Wickford. The small addition to the Premier Worsted Mills previously mentioned is to enlarge the dyeing department.

Tennessee, Springfield. The addition being built for the Springfield Woolen Mills Co. will be four stores high, 50 by 60 ft., of brick construction. It will be used for storage purposes only. H. Tatham is superintendent and buyer.

---

**Mills Starting Up.**

Massachusetts, Athol. What is known as the Kauffman satinet mill, formerly operated by W. H. Kauffman, has been purchased by Joseph L. Rome of Gardner. The property is assessed for $8,000 and includes a factory building, 40 by 100 ft., 2 stories high, 6 dwelling houses, a number of acres of land and water rights. The property was owned by the Holyoke Warp Co. of Holyoke. The mill will be started up by Mr. Rome and his sons, Abraham and Samuel, on batts and operated under the style of J. L. Rome & Sons. Abraham Rome will act as superintendent.

*Massachusetts, Lowell. The Lowell Felt Co. will be ready to begin manufacturing in a few days, all of the machinery having been installed in the plant of the new company. This concern was organized last December with capital stock of $25,000 by W. D. Smith, president, and Dwight Smith, treasurer and buyer, formerly of the Bacon Felt Co., Winchester, and leased one of the buildings of the Middlesex Co. Wool felts and wool wadding will be produced. E. R. Libby, formerly connected with the Milbury (Mass.) mill of the Felters Co., is superintendent of manufacturing. The Boston address of Dwight, Smith & Co. is 367 Congress St.

New Hampshire, Ashland. O. G. Morrison, superintendent of the Elm Mills Woolen Co., Tilton, New Hampshire, and E. G. Morrison, treasurer of the Merrimack Woolen Co. of Lowell, Mass., have purchased the Squam Lake Woolen Mills, formerly operated by the late Robert H. Hart, and will put them in operation at once.

E. G. Morrison states that he will manage the plant and that it will have no connection with the Merrimack Woolen Co., but whether it will be operated as an independent company or in connection with the Elm Mills Woolen Co. of Tilton has not been decided. The plant contains six sets and 26 looms which have been operated on broadcloths.

## SILK.

**New Mills.**

Connecticut, Willimantic. The Rossie Velvet Co. of Mystic has not determined as yet how many looms will be installed in the mill now under construction and to be operated as a branch. The same class of goods that is made at the Mystic plant will be made here. Construction work on the buildings is going forward.

New Jersey, Paterson. The Regroy Ribbon Co. has been incorporated with capital stock of $100,000 to manufacture silk ribbons, and will locate at 81 Cross St. The incorporators are Emil Fischer, Robt. F. Buckley and Jonathan Pompret, Jr., all of Paterson. Mr. Fischer was formerly president of the Muller Mfg. Co. It was reported in March that he contemplated starting a new ribbon plant.

*New Jersey, Alpha. Machinery from the Delhi Silk Co.'s throwing plant is being set up in the new building of the Alpha Silk Co. This will not complete the equipment and more machinery is to be added when the building is wholly finished.

## MISCELLANEOUS.

*Georgia, Moultrie. There have been various reports of the new mill projected by W. C. and W. J. Vereen, president and treasurer, respectively, of the Moultrie Cotton Mills, variously stating that the Moultrie Cotton Mills would be succeeded, that a new yarn mill would be built, a new weaving plant proposed, etc. The facts are that Messrs. Vereen have organized the Riverside Mfg. Co., Inc., with capital stock of $25,000 to manufacture mattresses, springs, comforts and pillows. W. J. Vereen will be president and treasurer and J. O. Macon, vice-president and manager. The plant will be in operation soon after April 1.

*Massachusetts, Fall River. Plans for the mill of the Standard Fabric Co. have been completed and are in the hands of contractors. As noted previously, the mill will be a three-story building, 220 by 88 ft., located on Portland St. near the American Thread Co.; 5,500 ring spindles, 30 40-shuttle looms and 1,500 braiding machines will be installed for manufacturing narrow fabrics and braids. There will be complete dyeing and bleaching departments and all machinery will be driven by electric power. The capital stock is $150,000. Dr. John Gilbert is president and Edwin V. Livesey, formerly superintendent of the Heywood Narrow Fabric Co., is treasurer and buyer. The directors are the officers and Richard H. Cook, L. Holden, Robert Place, John Fielden, James C. Potter and Albert A. Jenks.

New Jersey, Somerville. The entire plant of the Cott-A-Lap Co. has been removed here from New Haven and is in operation, manufacturing the same lines as formerly with the lines of the Tex-Ta-Dor-Na Mfg. Co., formerly of Columbus, Ohio, added. Rollin S. Woodruff is president, Edw. W. Jeffcott, secretary and treasurer, and Robt. C. Jeffcott, general manager.

New Jersey, Paterson. It is reported the National Silk Dyeing Co. will make extensive additions to the finishing and piece dyeing plant at Dundee Lake.

New York, Brooklyn. The Manhattan Shoddy Mill, a corporation manufacturing shoddy for the mattress and upholstering trade, is erecting a factory building on Frost St., between Lorimer and Leonard Sts., on a lot 150 by 100 ft., recently purchased. The present address is 59-69 Frost St. Harry Brener is secretary and managing director.

*New York, Groveville. Buildings formerly owned by the Groveville Carpet Mills and recently purchased by Loeb, Schoenfeld Co., manufacturers of curtains and fancy embroideries at New York and Camden, New Jersey, are being repaired and the floors of the weaving room are being reinforced. The work is being done by the Berlin Construction Co. and is to be completed as soon as possible.

Pennsylvania, Chester. An addition is being built to the power department of the Chester Lace Mills, the boiler house being enlarged. In February new finishing equipment was added. There are rumors that the company will shortly build a large addition and that the increase in the power department is designed to furnish power for the proposed new mill.

Pennsylvania, Philadelphia. Boger & Crawford, now located at 4129 Frankford Ave., Frankford, where they are dealing in and coning, winding and tubing mercerized yarns, are asking for bids on a new factory building, 48 by 58 feet, to be located at Ontario and Janney Sts.

Pennsylvania, Philadelphia. The L. & T. Winding Co., located in the Peerless Building, on Willard St., east of Kensington Ave., is putting in additional winders, etc.

Pennsylvania, Philadelphia. The Textile & Hosiery Printing Company, with John Bray as manager, have equipped the two-story building at 2042 E. Clementine St. with machinery for extracting and printing hosiery and other fabrics.

Pennsylvania, Philadelphia. The two-story building, 2018-24 E. Willard St., is being equipped for the bleaching of hosiery, underwear and cotton piece goods by parties who will operate it under the name of the Fern Rock Bleachery.

Pennsylvania, Scranton. A boiler house will not be built at present by the Scranton Lace Curtain Co., as has been reported. The only changes to be made at present are the expenditure of about $20,000 on new machinery equipment and the rearrangement of the finishing department, including the erection of a two-story addition, 48 by 165 ft.

*Rhode Island, Niantic. R. A. Sherman's Sons Co. of Westerly has begun preliminary construction work on the mill for the Bradford Dyers' Association, Ltd. Contract for the mason and brick work has been sub-let to Chas. Crankshaw, a contractor of Providence. R. P. Jenks of Providence is the architect, as noted.

*Rhode Island, Pawtucket. Organization has been effected by the Cadoza Lace Works, incorporated some months ago with capital stock of $400,000. The officers are M. E. Ozanne, president; R. Livingston Beeckman, vice-president, and Henry E. Tiepke, Pawtucket, secretary and treasurer. Lace machinery has been imported.

*South Carolina, Columbia. The building on College St., purchased last fall by the Massasoit Mfg. Co., Fall River, Mass., is being remodeled and will be used as a warehouse or depot for the handling of their Southern business. Some machinery will be installed and will be operated by electric power.

*South Carolina, Greenville. In about 30 days work will be started on the factory building for the Clayton Linen Mills, reported incorporated last week with capital stock of $200,000, and according to plans manufacturing will be begun in about 6 months. Raven I. McDavid will be president. Mr. McDavid reports that the concern will have between 5,000 and 7,000 spindles and will manufacture towels and similar goods.

*South Carolina, Spartanburg. The Union Cotton Bagging Corp., the new concern which succeeds the Margolius Co., Inc., Norfolk, Va., and will establish a branch at Spartanburg, has purchased the plant of the Lion Furniture Co., Spartanburg and will equip it as soon as possible as a cotton waste plant.

Texas, El Paso. The mill under construction for the Mexican and Indian Drawnwork Co. will be completed about September 1, and from 40 to 60 hands will be employed making Mexican hand drawnwork, Mexican zerapes and Indian blankets. Edgar D. Park is president and general manager and J. R. Daugherty, treasurer. An office is located at 6 and 7 Morgan Bldg., El Paso.

*Wisconsin, Elk Mound. Last December we reported the incorporation of the Elk Mound Flax Mill Co. with capital stock of $6,000. The corporation has secured an old mill and will begin producing flax and tow about July. The officers are A. B. Ausman, president; E. S. Gregerson, treasurer and buyer, and A. Somers, superintendent.

## FAILURES AND SUSPENSIONS.

Georgia, Atlanta. An involuntary petition in bankruptcy has been filed against the Elizabeth Cotton Mills. The petition alleged that the corporation admitted in writing its inability to pay its debts and its willingness to be adjudged bankrupt. Clyde L. King has been appointed receiver.

Georgia, Toccoa. The Toccoa Cotton Mills and the Toccoa Banking Co., owned by the same interests, have failed, owing to speculation in cotton which resulted in a loss of $150,000.

Pennsylvania, Lancaster. The Lancaster Knitting Co. has made an assignment to Wm. M. Longstreth of Philadelphia for the benefit of creditors. The concern has capital stock of $12,000, and manufactures women's Swiss ribbed underwear on six knitting and seven sewing machines. B. F. Hershy is president, treasurer, superintendent and buyer.

## FACTS AND GOSSIP.

Arkansas, Pine Bluff. Capitalists have made a proposition to build a $200,000 cotton mill providing citizens will subscribe $66,000. The local commercial organizations will probably take up the offer.

California, Sacramento. The Chamber of Commerce, S. I. Hopkins, chairman of the committee on manufactures, has an option on 1,000 acres on which it is proposed to cultivate ramie. The plan is to establish a ramie yarn factory eventually.

Canada, Montreal. A merger of Canadian silk mills including Belding, Paul & Co., Ltd., of Montreal, Corticelli Silk Co., Ltd., St. Johns, Quebec, and other concerns, will be effected May 1. A new corporation will be formed with capital stock of $1,600,000. Frank Paul, president of Belding, Paul & Co., Ltd., states that the merger is not as yet completed, but probably will be on the first of May.

Colorado, Trinidad. Joseph Gilbert, secretary of the Chamber of Commerce, advises that the matter of establishing a woolen mill in Trinidad is as yet premature, and that they do not know whether anything will materialize from their efforts in this direction. There is another report that a Senator Barela is interested in the project and would like to establish a plant for manufacturing Navajo blankets and Mexican zerapes. It has been noted previously that the Chamber of Commerce was negotiating for the equipment of the Topeka Woolen Mfg. Co., Topeka, Kansas.

*Connecticut, East Killingly. The International Cotton Mfg. Co., reported incorporated some time ago, is making alterations in the Bishop Mill. A new smoke stack is being erected and the engine house is being remodeled. The old machinery is being taken out to make room for new equipment, which is expected to arrive soon.

Connecticut, Meriden. Some of the equipment of the former H. Adlman Co. is being removed to 149 West 24th St., New York City, where it will be operated under the name of the Pioneer Braid Co. Other parts of the equipment will be installed at the corner of George and Mechanic Sts., this city.

Connecticut, Norwalk. The local branch of the Salts Textile Mfg. Co. will be shut down finally in a few weeks. This branch is to be discontinued.

Georgia, Reynolds. Local people are interested in a $50,000 cotton mill project. J. H. Neisler, secretary of the Chamber of Commerce, is inter-

ested and is quoted as saying that the success of the project is practically assured.

*Georgia, Savannah. Elmer McCarthy has come to Savannah from Laconia, New Hampshire, to take charge of the reported enlargement of the Savannah Cotton Mills of G. H. Tilton & Son, which it is understood will be undertaken during the summer.

Pennsylvania, Shamokin. An alleged unfair docking system has caused a strike in the mills operated by J. H. and C. K. Eagle, which necessitated the shutting down of the Shamokin Silk Mills, the Edgewood Silk Mills and a dyeing plant controlled by the concern.

Rhode Island, Bellefont. Robert Grieve, receiver in bankruptcy for the Shawmut Finishing Co., has leased the plant to the Hohokus Bleachery and this concern is now operating it.

Rhode Island, Pawtucket. An increase will be made in the capital stock of the Seekonk Lace Co. to $300,000. Last fall the Seekonk Lace Co. built an enlargement with capacity of 18 lace machines at a cost of $25,000.

Rhode Island, Pawtucket. The capital stock of the Slater Mfg. Co. is to be increased from $400,000 to $550,000. Last fall work was started on a new picker room and plans were made to construct a new warehouse.

South Carolina, Bowling Green. On May 13 the property of the Bowling Green Knitting Mills will be sold at public auction. The company will be dissolved. The plant has been idle for some time.

South Carolina, Calhoun Falls. Reports that the Calhoun Mills contemplate increasing from 25.000 spindles to 40,000 spindles are incorrect.

*South Carolina, Greenville. The Parker Cotton Mills Co. has formally organized with the officers and directors reported previously. The capital stock is $10,000,000, and the companies controlled are the Victor Mfg. Co. and Greers Mfg. Co. of Greer; Apalache Mills of Arlington; Beaver Dam Mills, Edgefield; Monaghan Mills, Greenville; Olympia Cotton Mills, Capital City Mills, Richland Cotton Mills and Granby Cotton Mills of Columbia. These plants have a total of about 360,000 spindles and 9,000 looms.

South Carolina, Greer. The capital stock of the Greers Mfg. Co. is to be increased from $200,000 to $350,000; 10,240 spindles and 280 looms are operated on print cloths.

Tennessee, Knoxville. Reports from Knoxville state that arrangements are being made to install cotton manufacturing machinery in one of the buildings of the Knoxville Woolen Mills and that machinery for the manufacture of lace curtains will be installed in a second building. It was reported several weeks ago that L. D. Tyson had bought the cotton department of the Knoxville Woolen Mills and would organize a new company and operate one of the mills, but there is nothing definite in this, and Mr. Tyson and associates do not know whether they will operate the plant or not.

Tennessee, Memphis. The report that Proctor & Gamble Co. of Cincinnati will build a cotton mill here is said to be incorrect. They will build a cotton oil mill.

Tennessee, Memphis. J. H. Erwin of Memphis, said to be representing a cotton manufacturer of South Carolina, and his associates, head a project to establish a $500,000 cotton mill here and are trying to raise $250,000 locally. About 20 of the leading business men and capitalists of Memphis were present at a meeting at which the prospects were discussed and the project is meeting with favor. C. C. Hansen, in whose office the meeting was held, has been instructed to appoint a committee to go to South Carolina for the purpose of investigating conditions and probable success of a similar concern in Memphis. It is said that if the proposed mill can be shown to be a probable success there will be no difficulty in securing the desired capital to finance a company. Another meeting will be held in a few days and at that time the matter will be gone into more fully.

Texas, Dallas. A plant may be established here for manufacturing absorbent cotton, towels, cotton gauze and cheesecloth. The promoters may be addressed at P. O. Box 505, Dallas.

Texas, Huntsville. J. B. Bagley, director of the Texas Textile School, College Station, Texas, has inspected the mill of the Texas State Penitentiary with a view to suggesting improvements. He will make a written report to the commissioners of the penal system of the State and it is said will also correspond with machinery manufacturers regarding the needs of the penitentiary plant.

*Texas, San Angelo. The woolen mill project being agitated is a $150,000 enterprise. The Chamber of Commerce has the matter in charge and is not prepared to announce any of the plans or names of the parties interested.

Vermont, North Pownal. A part of the North Pownal Mills, now owned by the Greylock Mills of North Adams, will be in operation within a few weeks. Extensive improvements have been made.

West Virginia, Raleigh. M. A. and W. H. Spangler have purchased the woolen mill formerly operated by C. P. Spangler & Son. There will be no immediate change in the business. Yarns, blankets, flannels and jeans are manufactured on 1 set and 3 looms.

Wisconsin, Jefferson. John E. Owen & Son with the assistance of the Jefferson Promoters' Club hope to build a new concrete mill during this year. The concern manufactures woolen yarns and the building which they formerly occupied has been burned. They are located temporarily in a storage building.

Wisconsin, Waupun. A bill is before the Wisconsin legislature providing for an appropriation of $45,000 for the equipment of the Wisconsin State Prison twine plant and $200,000 as a fund for the purchase of raw material to begin work in the plant.

## New Publications.

**[Any work noticed under this head can be obtained through the office of this journal.]**

Dockham's Glove & Mitten Manufacturers; Dockham Publishing Company, 6 Beacon St., Boston. Price $1.00.

This Directory is issued in pamphlet form and contains a list of glove and mitten manufacturers in the United States and Canada, including kid gloves, leather gloves, cloth and knit gloves and mittens.

The Clans, Septs and Regiments of the Scottish Highlands; by Frank Adam, F. R. G. S., F. S. A. (Scot.); W. & A. K. Johnston, Lt., Edinburgh and London; 505 pages, 5 1/2 by 8 1/2. Price $5.

This book is of interest to textile manufacturers chiefly because of the 114 colored plates of Scotch tartans which are found in the appendix. The scope of the body of the work is indicated by the following extract from the table of contents: The Rise of the Highland Clan System, The Highland Clan System, Clans, The Septs of the Highland Clans, Highland Surnames, The Highland Garb, Tartan, Highland Music, The Celtic Language in the British Isles, The Highland Regiments Past and Present, Scottish Lowland Regiments, The Highlands Subsequent to the Destruction of the Clan System.

The Textiles Industries; by William S. Murphy, assisted by leading experts in textile technology; vol. 7, 184 pages, 6 1/2 by 10; the Gresham Publishing Co., 34 Southampton St., Strand, London, England. Price per volume, $3.

The seventh volume of this elaborate work includes chapters on the following subjects: Tapestry Carpets, Double Cloth Carpets, Hosiery and Lace, Power Frames, Hosiery Yarns and Fabrics, Hand Made Lace, The Lace Loom, The Finishing of Lace, Factory Finishing, General Theory of Bleaching, Bleaching Process, Mercerizing. This volume has been kept at the high standard of the preceding issues.

## Business Literature.

Roxbro Braided Hose; Boston Belting Co., Boston, Mass.

A 16-page pamphlet describing and illustrating the Roxbro braided hose, which is especially well adapted for both air and water.

Buffalo Spray Nozzles and Strainers; Buffalo Forge Co., Buffalo, N. Y.

A 15-page booklet describing and illustrating the "Buffalo" spray nozzles and strainers for chemical plants, blast furnaces, mine moistening, gas washing, condenser systems, paper mills, cooling towers, agricultural purposes and for spraying insecticides and any other purpose for which a fine spray is essential, such as for moistening air under any condition, whether for humidifying purposes or for settling dust and ashes.

Industrial Plants; Charles T. Main, 201 Devonshire St., Boston.

This is an attractive publication illustrating a few of the many representative plants for which Mr. Main has been the engineer. They cover not only new mill construction and equipment, but steam and water power plants and comprise many of the large industrial establishments, particularly in textile lines, which have been erected in recent years, including the Wood Worsted Mills, Washington Mills dye house, the power plant and weaving mill of the Bigelow Carpet Co., Ayer Mills, Columbia Rope Co. and many others.

Metal Reels and Spool; Frank Mossberg Co., Attleboro, Mass., Catalogue No. 101.

This 72-page catalogue contains a description and illustrations of the extensive line of metal reels and spools manufactured by the Frank Mossberg Company for a great variety of uses. A description of their metal beams and spools for textile mills will be found in this issue. In addition to the metal beams and spools the catalogue describes the shop barrels, wrenches, drop wires and hank counters.

Cotton Crops and Prices; The S. Blaisdell, Jr., Co., Chicopee, Mass.

A report of the cotton crop of the United States for the last 38 years, also the highest and lowest prices of middling upland cotton in New York since 1836, all enclosed in a small leather cover which can be conveniently carried in the pocket.

## Roller Bearings.

A safe criterion of the merits of any article is the class of men associated with it. This fact has been demonstrated in the case of the Sells roller bearings, manufactured by The Royersford Foundry & Machine Co., of Philadelphia and Royersford, Pa. It is characteristic of Mr. Sells that he should maintain such an organization as he is putting back of the Sells roller bearing. He has further augmented this organization by procuring the services of W. C. DuComb, who will hereafter take an active part in the distribution of bearings. Mr. DuComb gained his first experience with the Otto Engine Works in their drafting room, followed by six and one-half years with the Riehle Brothers Testing Machine Co., discontinuing his position as engineer of this latter firm to act as assistant engineer for the Standard Roller Bearing Company, from which position he has resigned to make this connection.

As a forerunner of the annual master car builders' convention at Atlantic City in June, the Royersford Foundry & Machine Co. have engaged double space this year, in which an even more comprehensive exhibit than ever will be made of the Sells roller bearings, "Rollerine," the new roller and ball bearing lubricant, and punching and shearing machines, all products of the Royersford Company. Manager John D. Sells will be in charge as usual.

### Small Direct Current Generating Sets.

The necessity of good illumination is often felt in places far beyond the reach of any lighting system. For such conditions the small direct connected direct current generating set effectively takes the place of kerosene lamps and provides also a most convenient source of power for driving small machines such as vacuum cleaners, dumb waiters, etc. This type of generating outfit is apt to be operated by attendants who are not very familiar with the care demanded for electrical apparatus.

As the plants are isolated their continuity of operation becomes of vital importance, for here a breakdown means great inconvenience and of course, the paralysis of all power-driven apparatus. The greatest possible care must be given to points of design in the machines that stand for ruggedness and durability. These qualities can be secured only by careful attention to mechanical details and design and careful selection of material on part of the manufacturer.

A pamphlet, Bulletin 130, recently issued by the Crocker-Wheeler Company of Ampere, N. J., contains some information regarding the design of these sets that is of interest to every prospective user. It is illustrated by halftone engravings.

### Electrical Equipment.

The General Electric Company has received an order from the Riverside & Dan River Cotton Mills, Danville, Va., for one 200 k. w. 600 volt three-phase generator, one 351 k. w. 600 volt, three-phase generator, two 20 k. w. 125 volt exciters, three 40 k. v. a. transformers, 16 induction motors of 10 to 100 h. p. capacity, and a 600 volt a. c. switchboard. The latter consists of 1 double circuit exciter panel, 1 single circuit lighting feeder panel, and 1 double circuit feeder panel for furnishing power to induction motor throughout the factory. The switching equipment consists of hand operated remote control K-3 and K-12 oil switches. A voltage regulator equipment was also ordered.

### The American Association of Commerce at Berlin.

For the purpose of aiding American manufacturers and business men in getting their goods into Germany and favorably placing the same, the American Association of Commerce and Trade was organized eight years ago by American business men doing business in the German Empire. The Association, carried on as an American Chamber of Commerce, with its Board of Directors and its committees, is doing good work in aiding American manufacturers. The Secretary, George S. Atwood, for the past twenty years in close touch with the German business world and the German government departments will give prompt attention to all inquiries.

The Association is a hustling organization, as evidenced by the gatherings of business men at its quarters, 59-60 Friedrich-Strasse.

### Danker & Marston Takes Fine Yarn Agency.

Richard Harwood & Son of Bolton, England, spinners and doublers of super combed yarns of very fine counts, have entered the American field and appointed as their agents in this country Messrs. Danker & Marston, 247 Atlantic Ave., Boston. They make a specialty of fine counts from 70s to 250s, single and twists, for all purposes for which these fine yarns are required, such as curtains, laces, tulles, thread, gloves, pincop and doubling weft, wire covering, etc. Stocks are carried in Boston.

### Larger New York Office.

After May 1st, the New York offices of the Detroit Steel Products Company will be at 225 Fifth Ave., moved from 2 Rector St., this company needing better facilities to meet the growing demand for Detroit Fenestra windows. Raymond H. Kinnear is the manager in charge of this office.

### Decision in Loom Patent Suit.

Judge Aldrich of the United States Circuit Court of the District of Massachusetts, handed down on April 14 the decision of the Court in the suit of the Draper Company against the Stafford Company, for alleged infringement of two claims of a patent granted to G. O. Draper, Oct. 2, 1894, on a feeler for looms. The Court decides in favor of the Stafford Company and holds that its construction and mode of operation are "clearly and radically outside of the Draper patent"; that "the defendant's machine does its work on different principles and through substantially different mechanical and structural means," and decides that there is no infringement. The Stafford Co. are issuing a circular informing the trade of their intention of protecting their patents against any infringement.

### The Foster Superheaters.

The Power Specialty Company, 111 Broadway, New York, report the following contracts secured for Foster superheaters: Cleveland Electric Illuminating Co., 9162 h. p. in Stirling boilers; C. C. C. & St. L. Railroad, 1548 h. p. in Stirling boilers; Solvay Process Co., Detroit, 5400 h. p. in Babcock & Wilcox boilers; Milwaukee Electric Railway Co., 6000 h. p. in Edge Moor boilers; Winnipeg Electric Railway Co., 7500 h. p. in Babcock & Wilcox boilers; New York, New Haven & Hartford Railroad Company at their Waterbury and Zylonite plants, 6000 h. p. in Bigelow-Hornsby boilers; Stone & Webster Engineering Corp., in the plants of the Minneapolis General Electric Co., Jacksonville Electric Light Corp., and El Paso Electric Railway Co., 9450 h. p. in Babcock & Wilcox type boilers.

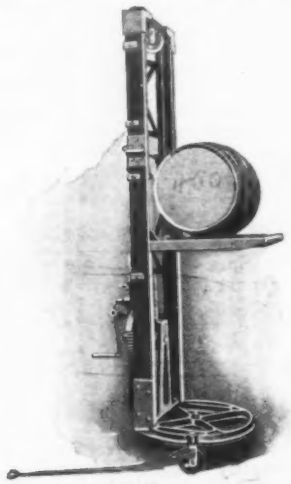
With one exception these contracts are all from previous users of Foster superheaters, and in many cases the contracts represent from the fifth to the fifteenth repeat order.

## Increasing Storeroom Capacity, and Reducing Cost.

From 25 to 50 per cent. of the storage capacity of most warehouses, storerooms, etc., is wasted by the unoccupied space next to the ceiling and by the large aisles that are necessary in order to handle and stack the goods.

THE PORTABLE ELEVATOR IN ACTION.

The Revolvator is a portable tiering machine which has a revolving base. The advantage of the revolving base is that the platform of the machine can be pointed down an aisle and a cask,



THE PORTABLE ELEVATOR.

bale or box tipped over on the platform, then, after raising the box or bale to the desired height the machine can be swung around on its own center, and the box removed at either side of the aisle, or in back if so desired. The fact that the Revolvator can be unloaded from the rear makes it possible to stack a wareroom entirely solid, leaving no aisles whatever.

Besides increasing the storage capacity of warehouses the revolvator also reduces the labor bill for it is stated that two men with a Revolvator can stack as much material as five men using the old method of working boxes up by stages. It also enables laborers to handle much larger and heavier boxes than is possible without a Revolvator. For instance, one man can easily raise a 1,500 to 2,000-pound bale up to the ceiling of any warehouse.

The revolvator also eliminates breakage when fragile materials are handled, inasmuch as each individual case is raised to the place to which it is to be stored and merely slipped off into the space waiting for it. In unloading, the operations are reversed, that is, the box is slid on to the platform and slowly lowered to the floor. This does away with the usual method of bumping boxes from one stage to another.

The revolvator consists of two uprights attached to the revolving base. The elevating platform is raised by means of a crank and gears. Two systems of gears are provided, one for high speed and the other for low. One man can easily handle bales up to 800 lbs. on the high gear and weights up to 1,500 lbs. on the low gear. In lowering, the speed of the descending platform is controlled by means of a hand-brake.

So that the revolvator can be moved through low doors or placed on elevators and taken from one floor to another, the uprights are jointed, allowing the upper part to fold over.

At the present time the revolvator is being successfully used for handling bales of wool and cotton or boxes of finished material in textile mills, and is also extensively used for loading heavy cases and bales on wagons and trucks.

The revolvator is built in any height up to 20 ft. and for handling any weight up to 1,500 lbs. Further particulars can be had by addressing the N. Y. Revolving Portable Elevator Co., Jersey City, N. J.

## "Overlock."

In an advertisement of second-hand machinery for sale which appeared in our April issue, the use of the word "Overlock" was inadvertently used in connection with another make of machinery than the Willcox & Gibbs Sewing Machine Co., to whom the right to the word "Overlock" in connection with sewing machines belongs exclusively by trade mark registration and use.

## Sizoleum.

Sizing warps made by the chain system proves very expensive, when, as is often the case, the threads stick together, owing to the right kind of size not being used. The Arabol Mfg. Co., 100 William St., New York, call attention to their Sizoleum and soluble softening oils as a remedy for this difficulty. These products can be used with either corn or potato starch. Sizoleum without the use of tallow is recommended as a reliable compound on print cloths, warps, sheetings and domestics.

### The American Society of Dyers.

On April 22 the American Society of Dyers entertained their members and their friends, of which there was a large number present, with a smoker at their club rooms, 2621 Kensington Ave., Philadelphia. The entertainment consisted of many enjoyable features and at its conclusion those present were also entertained by the society at an informal luncheon.

This organization, which was started during the early part of March, 1896, is composed of men employed in the dyeing business, for both social and business purposes, and numbers among its members men prominently engaged in this line of the textile industry, in all parts of the country. Its officers are John E. Wright, president; William Taylor, vice-president; N. Litchfield, treasurer, and Philip Bowers, secretary.

---

Chas. A. Masters Co., selling agents for the Yale brand stockings, has consolidated their business with that of Wilson Larrabee & Co. Mr. Masters will continue to look after his trade in the regular way.

### Getting Together in the Mill.

On assuming his duties as general superintendent of the New York Mills, George Fish conceived the idea of having an occasional conference of the heads of the different departments so that they might be able to get better acquainted with each other, exchange views and promote a feeling of good fellowship. In accordance with this idea he invited the superintendents and overseers of the company to be his guests at Hotel Martin, Utica, N. Y., on Friday evening, March 31st. After the guests had arrived and a half hour of general sociability was spent the party accompanied Mr. Fish to the private grill room. Before the company were seated Mr. Fish introduced A. M. Young, superintendent of finishing, as toastmaster of the evening and the success of the New York Mills was drunk. After the guests had partaken of the many good things which go to fill up the inner man, cigars were lighted and the post-prandial exercises began.

THE "GET TOGETHER" BANQUET AT THE NEW YORK MILLS.

The first number was the singing of the Nemo Quartet, which was so successful that they were obliged to respond to several encores. Mr. Young then introduced the assistant treasurer, E. M.

Coughlin, who gave a very interesting history of the New York Mills. His remarks were very interesting and called for hearty applause at the finish. He was followed by E. M. Claus, superintendent of No. 1 Mill, who spoke on "Loyalty to the Company."

After listening to music, Mr. Young called upon H. R. Whitehead, superintendent of No. 2 Mill. Mr. Whitehead spoke very feelingly of the effects of a gathering of that sort upon the members present. He wished to impress upon them the fact that the New York Mills had a leader in Mr. Fish whose motto was a square deal to all, and who was sure to put the New York Mills in a position by itself in the textile world if he had the support and cooperation of his superintendents and overseers. E. E. Clark, mechanical superintendent, was next introduced and he kept the party laughing by his funny stories, and finished by urging loyalty as the previous speaker had done.

As a fitting climax to the event Mr. Young called upon Mr. Fish. Mr. Fish spoke very earnestly and forcibly of the possibilities of the future for the New York Mills. He gave the men to understand that they need have no fear as long as they were upright and honest and gave to New York Mills the best they possessed. It was nearly 1 o'clock when the party departed, wishing Mr. Fish the best of success in his work at the New York Mills.

## The Bradford Durfee Textile School.

The graduating exercises of the evening class of the Bradford Durfee Textile School, at Fall River, of which Fenwick Umpleby is principal, were held on April 18. After the address of welcome by Leontine Lincoln, president of the school, Milton Reed and James A. Murray, of Fall River, spoke. The president of the school then presented certificates to the following evening graduates:

### CERTIFICATES AWARDED.

Picking and Carding:—Richard Boardman, George W. Bower, Matthew H. Bower, Peter Brault, Frank P. Delehanty, James T. Duffy, Sumner F Hart, Robert Healey, James Heppenstall. Dana S. Hilliard, Harry J. Keenly, Martin F. Kelly, N. Clifford Luscomb, Frederick J. Norris, William C. Sedgwick, Joseph Shaw, Luke Suthers, Harry Warrington, George Wilkinson.

Ring Spinning, Twisting and Warp Preparation:—George Bence, Wilfred J. Berard, Charles H. Brownell, Charles J. Judge, James Heaney, Antone Mercier, Frederick J. Norris, John O'Neil, James B. Williams.

Mule Spinning:—Edwin Birkett, Abraham Botway, John F. Considine, Harry Ingham, Thomas E. Kennedy, Arthur Sharratt, Edward Slater.

Mill Calculations:—Joseph B. Bolgar, Damase Bernier, Thomas Connell, Joseph Corner, Patrick Finerty, Henry T. Haley, Charles McGrath, Elmer A. Manchester, John S. Monk, Frank Parkhurst, Robert Salter, John T. Sunderland.

Plain Weaving and Fixing:—Richard Ardis, Wallace Babington, Joseph Baron, William Baron, James Beattie, William Bradbury, Thomas S. Brown, William Burns, John W. Cook, John T. Dolan, John Dunnigan, William Fellowes, Ulric D. Fiola, Peter Flanagan, Philipa Goyette, James J. Grant, John T. Gudgeon, George Hartley, Adolphe Hebert, Ernest F. Heuberger, Herman Heuberger, Alexander Jackson, John Lees, Jr., Thomas A. Logan, James W. Longworth, William Lunn, Andrew McClelland, Anthony F. McConnell, George Mayhew, William Moffatt, Alfred Moran, Joseph Morin, Thomas H. Mort, Henry T. Munroe, William S. P. Murphy, David Parker, Alfred Plummer, William Pownall, Romeo Quintin, James Reed, John Reagan, Hans Peter Rosenvinge, James Rushton, William A. Scott, Simon L. Silevitch, Joseph E. Sinott, James E. Standing, James B. Sullivan, John Sullivan, William Sutcliffe, Samuel Siddall, Wilfred Taylor, Daniel Warren, William Wiggins.

Box and Dobby Fixing:—John Green, John T. Gudgeon, Jacob Knowles, George Mayhew, George Morris, Patrick J. O'Brien, William Phillips, William Taylor.

Jacquard Weaving and Fixing:—Napoleon Bossie, Ralph I. Hathaway, Eli Porter, James Stewart, Patrick J. O'Brien.

Jacquard Weaving:—Rose A. Brennan, Annie E. Burke, Louis F. Phelan.

Dobby Designing:—Richard H. Bradley, George bury, Sanderson W. Hays, Anthony F. McDonough, George A. Weaver.

Elementary Designing and Cloth Analysis:—Henry T. Haley, John D. Madden, William H. Parkinson, Jr., Enoch Windle.

Jacquard Designing:—James T. Eccles, William H. Roberts.

General Chemistry:—Alfred J. DeCouagne, Maurice R. Cullen, William C. Eddy, Fred O. Gifford, Joseph F. Halloran, Alexander Harley, Charles E. Hathaway, Jr., Francis J. Lenehan, Alfred J. Sullivan.

Dyeing:—William M. Rimmer.

Commercial Analysis:—John P. Cassidy, Charles W. Borden, Roch P. L. Nadeau.

Steam and Electrical Engineering:—August Adolph, William M. Burrows, William B. Collins, Martin P. Derrig, Edmond J. Durand, Walter Esker, Francis T. Estes, Francis H. Furze, George A. Healey, Richard Hindle, John H. Howarth, Alfred Hubert, John F. Kay, James F. Leahy, Edward M. Martin, Frederick R. Martin, Thomas H. Menchion, Ernest C. Read, James H. Scott, William Stansfield, Ellis Bartholomew Sullivan, Joseph Vaillancourt.

Machine Shop and Drawing:—Arthur Audet, Joseph A. Beauregard, Francis J. Bradbury, William C. Burrows, Edgar C. Chandler, Ralph Clarke, John J. Connolly, Adrien Corriveau, Armand Corriveau, Arthur F. Dean, Daniel Driscoll, Ernest F. Durfee, Joseph C. Endicott, William L. Foster, Daniel C. Funk, Charles B. Gardner, Henry R. Hamer, Matthias A. Harrington, John Thomas Higgins, Eli Howarth, Mark Howarth, Nicholas J. Hurst, Louis J. Jarvis, John Lane, Thomas F. Lynch, Francis P. Macomber, Luke J. B. Marier, John T. Mercer, Alfred Moss, John V. Nelson, Hugh Neville, Eugene M. Parent, Frank D. Parkhurst, Joseph Pelletier, Albert

Poirier, William F. Poole, William M. Poole, Frank P. Prescott, Arthur H. Provost, John W. Radcliffe, Thomas J. Rourke, Raymond V. Shea, Bernard J. Sipples, John Smith, Nathaniel A. Stover, Joseph J. Stratton, Thomas G. Stratton, Richard Veevers, Henry R. J. Vigeant, Ralph A. Vigeant, George E. Warren, Jr.

Machine Drawing:—Ernest L. Brightman, Walter Brown, Andrew J. Cox, Thomas V. Hannigan, George J. Hannigan, Hiram W. Harrison, William Brierley Mellor, Arthur A. Noel.

Cotton Grading and Stapling:—Richard Boardman, Joseph P. Bolgar, Tom Brierley, William H. Broomhead, James F. Carey, Daniel H. Carragher, Hugh J. Carragher, Patrick Finerty, Thomas Finerty, Gordon Gildard, Harry Jackson, Martin Kelley, John Alden Miller, Jr., John S. Monk, Herbert Smith, John W. Sutcliffe, Vincent Howe.

Mill Arithmetic:—John Andrew, William T. Booth, Edward F. Cook, Jr., George Corscadden, James P. Coneíy, John Deplitch, Jules Duperre, Sandy Harrison, William G. Collins, Robert R. McMillan, John R. M. Nicholson, Edward J. O'Donnell, Thomas Poirier, John Poulton, Philip Reilly, Eugene Roy.

## The Southwark Mills Sale.

The five days' sale of the Southwark Mills Co. properties—real estate, machinery and equipment, cloth and yarns, etc.—at Philadelphia, was completed at noon Saturday, the 29th of April. The sale followed the advertised schedule to the letter, beginning Tuesday morning the 25th and continuing without interruption or delay of any kind or nature daily through Wednesday, Thursday, Friday and until its finish at half-past twelve o'clock Saturday noon—with the single exception of late Wednesday afternoon when the first 122 lots of Thursday's schedule were sold. On Tuesday the five parcels of real estate were sold for $190,000 (assessed for $183,000), also the machinery and equipment at 31st and Reed Sts. for $10,860 or a total for the day of $200,860; on Wednesday and Thursday the machinery and equipment—with some yarn—at the 21st St. and Washington Ave. and the 3d and Moore St. plants (1,578 lots) were sold for $68,400; on Friday morning the cloth was sold for $54,000, the balance of the day and Saturday forenoon being devoted to the sale of the machinery and equipment—with some yarns—at 8th and Tasker Sts. (1,590 lots), or $112,900 for the fourth and fifth days; the total result of the sale was $382,160. The sale undoubtedly was a precedent in the dispersal of textile properties in this country. It was probably the largest public disposal of woolen and worsted properties. The sale proceeded with perfect order, great regularity and smoothness from beginning to end; it was given thorough advanced publicity through the metropolitan newspapers and the more prominent trade publications, which resulted in an attendance from the breadth of the country or bidders from as far west as Provo, Utah, and from as far north as Canada; a very careful estimate shows at least a thousand persons present during the five days. The sale comprised 3619 catalogued lots and averaged $105 per lot, whether the lot comprised a box of mill crayons, a drum spooler, a loom or a piece of real estate; with it came the first real spring weather of the season. The great interest in the result is evidenced by the constant inquiries over the local and long distance telephone and the success was most generally conceded to be a matter of congratulation for Messrs. J. E. Conant & Co. the auctioneers and managers of the sale.

## Napier & Herrick.

Napier & Herrick, 346 Broadway, New York, have been appointed sole selling agents for the product of the Norwich Knitting Co., of Norwich, N. Y. They will take over this line on June 1st. Although this firm is not yet three years old, its success has been pronounced and it is already among the well known knit goods selling houses in New York City. They sell to the jobbing trade

## The Philadelphia Textile School.

The board of government of the Alumni Association of the Philadelphia Textile School at a recent meeting decided to hold the annual business meeting of the association on Thursday, June 1, 1911, and the outing and banquet on Friday, June 2, 1911. The committees appointed are:

Outing: Messrs. H. S. Landell of the Richard Aiman Co., George A. Denny of the Diamond Textile Machinery Co., and W. J. Maurer of the F. W. Maurer & Sons Co.

Banquet: Messrs. Willis Fleisher of the Shelbourne Mills, C. E. Firth of Firth & Foster Co., and Charles Bond of Chas. Bond Co.

Souvenir Menus: William Steele of the Delaine Mills, A. G. Sherwood of Schrack & Sherwood, and Wm. C. Robb of H. A. Metz & Co.

Because this is to be the tenth annual meeting, efforts are being made to introduce certain new features, especially in the outing. Reservations for the banquet may be made by addressing the association at the school.

John H. Bateman has accepted the position as designer in the worsted department of the Orr Felt and Blanket Co., Piqua, Ohio. He was formerly employed at the French River Textile Co., Mechanicsville, Conn.

James H. Redmond has been appointed designer at the Hoosac Worsted Mill, North Adams, Mass. He was formerly employed at the Moosup Mill, American Woolen Co., Moosup, Conn.

L. L. Love has severed his connection with the Dustin Island Woolen Mill, Penacook, N. H., as boss weaver to accept a similar position with the Rivulet Mill, owned and operated by Lawrence Keegan at Uxbridge, Mass.

Daniel Sheehan has accepted the position as overseer of carding at the French River Textile Co., Mechanicsville, Conn. He comes from Pittsfield, Mass.

# Recent Textile Patents.

BOBBIN. 989,886. Simon W. Wardwell, Providence, R. I.

CLOTH TREATING Apparatus. 988,703. David Gessner, Worcester, Mass.

DYEING. 989,186. Rene Ott, Elberteld, Germany.

DYEING APPARATUS. 986,633. John C. Evenden and Charles Frohlich, Amsterdam, N. Y.

DYEING HALF Wool Goods. 990,023. Hans Walther, Elberfeld, Germany.

DYEING MACHINE. 989,644. Joseph Richardson and Jacob F. Neef, Philadelphia, Pa.

DYEING WOUND Yarn. Apparatus for Use in. 990,064. Herman Resch, Loerrach, Germany.

EMBROIDERING Machine Shuttle. 989,301. Morris Schoenfeld, Roeshach, Switzerland.

FABRIC. Automatic Machine for Laying Adhering Cords or Threads upon a Stationary Mandrel to Form an Unwoven. 987,791. Eugene D. Bayne, Cleveland, O.

FIBER CLEANING Apparatus. 989,349. John Hampson, Chilworth, England.

JUTE and Like Fibrous Material Woolly. Rendering. 990,012. Peter Schmid, Basel, Switzerland.

KNITTING MACHINE. 990,595. Walter F. Rolston, Rockford, Ill.

LOOM SHUTTLE Tension Mechanism. 990,334. Mario Camagni, Paterson, N. J.

LOOM. Needle. 988,589. Charles J. Nauen, Paterson, N. J.

LOOMS. Mechanical Filling Detector for Weft Replenishing. Benjamin F. McGuiness, Saundersville, Mass.

LOOMS. Thread-cutting Temple for. 990,505. Edward S. Stimpson, Hopedale, Mass.

LOOMS. Wage Registering Apparatus for Mechanical. 988,957. Samuel Marschik, Bruenn, Austria.

LOOMS. Adjustable Holder for Insulating. 989,853 Edward H. Kruse, Fort Wayne, Ind.

LOOMS. Electromechanical Stopping Mechanism for. 988,986. John F. Dustin, Fulton, N. Y.

LOOM SHEDDING Mechanism. 989,061. Eppa H. Ryon, Waltham, Mass.

LOOMS. Filling Detector or Feeler for Weft Replenishing. Eppa H. Ryon, Waltham, Mass.

LOOMS. Shuttle and Shuttle Block for Narrow Ware. 989,091. William Wattie, Worcester, Mass.

MEASURING and Cutting Machine. Cloth. 990,026. Emil Zipper, Vienna, Austria.

SPINNING RINGS. Fastening Device for Permitting the Interchange of. 990,360. Lewis T. Houghton, Worcester, Mass.

SPINNING MACHINES. Cleaning Device for Lifting Rods of. 989,641. William G. Ragsdale, Jamestown, N. C.

SPINDLES into Cops. Machine for Inserting. 989,782. Eduard Herzog, Erlach, Austria.

SPINNING Machine Thread Guide. 990,724. John S. Furtardo, New Bedford, Mass.

SPINNING FRAMES. Doffing Motion for 989,183. Norman R. Newsholme, Keighley, England.

SPINNING HEAD. 988,306. John Buckley, Franklin, Ida.

SPINDLES. 989,261. Henry S. Hjorth, Cambridge, Mass.

SPINNING MACHINE Weight Lever. 990,806. Ezra Dixon, Bristol, R. I.

SPINNING MACHINES. Thread Breaking Device for. 990,438. Ferdinand Q. Hartman, Danville, Pa.

SPINNING or Twisting Machine Ring. 990,501. Alonzo E. Rhoades, Hopedale, Mass.

SPOOL. 988,755. Charles A. Brinley, Philadelphia, Pa.

SPINNING MULE. 989,513. William D. Rundlett and Henry White, North Andover, Mass.

THREAD FINISHING Machine. 990,564. William C. Keyworth, Paterson, N. J.

THREAD FINISHING Machine. 989,983. William C. Keyworth, Paterson, N. J.

THREADS. Manufacturing Artificial. 988,430. Ernst Brechtel, Hanau, Germany.

THREAD BEAMS. Tension for Rotary. 989,-123. Warren M. Conrad and Karl G. List, Chelsea, Mass.

WEBBING. Elastic. 989,985. Waldmar Kops, New York.

WOOL WASHING Machine. 989,622. Georges Malard, Tourcoing, France.

YARN and Thread. Device for Removing Snarls, Kinks and Slacks from. 988,362. John F. Lodge, Philadelphia, Pa.

YARN CARRIER. Tuft. 989,060. Eppa H. Ryon, Waltham, Mass.

YARN in Hanks with Liquid. Apparatus for Treating. 990,802. Alexander Clavel, Basel, Switzerland.

## Recent Textile Trade Marks Registered.

"Rusleen." Petticoats and Underskirts. Sears, Roebuck & Co., Chicago, Ill.

"Velooze." Velvets. Julius Einstein, New York.

"Vari." Machine made laces. Vari Lace Mfg. Co., New York.

"Eelskin." Textile belting. Boston Belting Co., Boston, Mass.

"Colonial." Spool cotton. Blodgett & Orswell, Pawtucket, R. I.

"Humidor." Linen piece goods. Strawbridge & Clothier, Philadelphia, Pa.

"Classic." Knit underwear. Carson, Pirie, Scott & Co., Chicago, Ill.

"Reignskin." Cotton cloth in the piece. Peters Mfg. Co., Boston, Mass.

"Corona." Hosiery. Syracuse Dry Goods Co., Syracuse, N. Y.

"Snowdrop." Linen and damask goods. Joseph Mathers, Belfast, Ireland.

"Louisiane." Percales. The Windsor Print Works, North Adams, Mass.

"Linized." Cotton goods in the piece. Wilmerding & Bisset, New York.

"Saluda." Cotton domets and flannels. Brogon Mills, Anderson, S. C.